The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. XXIV. No. 624 JUNE 13, 1931 Prepaid Annual Subscription: United Kingdom, £1.1.0; Abroad, £1.6.0

Contents

	PAGE
EDITORIAL: A Welcome Note of Optimism; Meta-Silicate; More About Hydrocarbon Oils; Hafnium	527
British Non-Ferrous Metals Research Association	529
A Pioneer of Safety Appliances	530
Annual Report on British Alkali Works (I)	531
Business Conditions in Australia	532
A Bookman's Column	533
A New Self-Contained Sifter and Mixer	534
Chemical Matters in Parliament	534
From Week to Week	535
Patent Literature	536
Weekly Prices and Market Reports	538
Company News	544
Commercial Intelligence	546
DYESTUFFS MONTHLY SUPPLEMENT: The Dyeing of Leather, Fur and Hair; Basic Intermediates for Dyestuffs (Phosgene); Cleaning and Inspection of Vessels Preparatory to Repair	31-36

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

The prepaid subscription to THE CHEMICAL AGE *is 21s. per annum for the United Kingdom, and 26s. abroad. Cheques, Money Orders, and Postal Orders should be made payable to Benn Brothers, Ltd.*

Benn Brothers, Ltd., proprietors of THE CHEMICAL AGE, *have for some years past adopted the five-day week, and the editorial and general offices (Bouverie House, 154, Fleet Street, London E.C.4), are closed on Saturdays.*

Telegrams: "Allangas, Fleet, London." Telephone: City 0244

A Welcome Note of Optimism

IN the annual report of Mr. W. A. Damon, chief inspector of alkali, etc., works, there is one note under the head of "Trade Conditions" that deserves wide publicity; it is so refreshing a change from much that one hears to-day. The inspector reports that in many quarters a spirit of optimism prevails that a revival of trade is at hand. More than this, he adds that there is evidence that such a feeling is justified, and he bases on this evidence the sound advice that manufacturers should anticipate events by the reconstruction of their plant, in order to enable them the more readily to compete with continental and other producers in due course. Many manufacturers, it is satisfactory to hear, are actively pursuing this policy and the inspector's confident opinion is that, on the whole, the resources of this country, so far as chemical plant is concerned, are wider than they were a year ago. This recommendation comes in most appropriately on the eve of the great chemical plant exhibition shortly to be opened in London. The makers in this country intend that this exhibition should be a really representative collection of British chemical plant, and the heads of our chemical manufacturing firms will be doing themselves and the British plant people a good turn by availing themselves of the latest applied knowledge in this vital field.

As to the general aspects of the alkali industry in this country, it may be noted that the number of works registered has declined slightly from 1928 and 1929 to 1,042 in 1930, while there has been a corresponding small decline in the number of separate processes of manufacture, the present figure being 1,911. On the other hand, the quantity of ammonium sulphate manufactured from liquor produced in gas-works has increased from 142,017 tons in 1929 to 142,271 in 1930, though the figure for 1928 was higher than either. The sulphate production from other works (coke ovens, iron works, producer gas, synthetic, etc.) shows a decline from 840,483 tons in 1929 to 709,231 in 1930. Each of these years, however, marks a substantial advance on 1928, when the total output was only 404,450 tons. Taking all sources of sulphate produced in this country, the 1930 figure is 709,231 tons, as compared with 840,483 in 1929 and 549,516 in 1928.

The inspector's report is, as usual, largely concerned with problems relating to the treatment of fumes and effluents. This subject has attained a vastly increased importance in recent years, first because of the many new processes of manufacture introduced, and secondly because of the stricter regard for the protection of the public against air and water pollution and of the importance of recovering valuable products from waste fumes, etc. Though immense progress has been made, this is still a field which offers great opportunities to the chemical engineer, whose services are becoming more and more recognised. Every year records some advance in the treatment of these difficult problems, and it is satisfactory to know of the employers' continued co-operation with the Government inspectors in bringing their works up to the highest practicable standard. The inspectors have come to be regarded as friendly advisers and are no longer suspected as policemen out for convictions. One case in which there was considerable inconvenience was at Billingham, arising from the use of pulverised fuel for steam-raising purposes and the emission of grit and dust from the chimneys. After much experimental work, several units of a patent washer were installed, and the difficulties, which were of an unforeseen character, are now believed to have been solved. An interesting development, in this connection, is the proposal to utilise a similar type of washer for the elimination of the sulphur oxides from the boiler flue gases at an electric power station. From the researches carried out at the instigation of the Government Chemist's Committee, it is thought that, to effect a high percentage removal, it will be necessary to introduce some form of alkali into the washing water.

Meta-Silicate

THE other morning we breakfasted with an expert on washing, fresh from his morning ablutions and in a mood to dispel our belief that this was an exact science. We were aware of the gap between tearing our clothes by excessive rubbing with soap on the one hand and destroying them more efficiently by the undue use of chemicals on the other, but we had hopes that laundry research, which has an association all to itself, would have found that excellent *via media* of compromise which is so typical of British endeavour. Probably this particular committee has not yet reported, but in the meantime our informant tells us of the virtues of silicate in a new commercial form as sodium meta-silicate, which apparently affords yet another instance of the wonder-working powers of the silicates, which can do almost anything from preserving eggs to surfacing roads or gluing fiberite boxes.

The use of silicate of soda in soap has long been practised, and the experts know many of its special virtues; it is far from being the mere filler that some of its detractors would allege. Meta-silicate, which is now a commercial product in solid crystalline form, has special virtues as a cleanser. When substituted for caustic alkali, for example, in the cleaning of milk bottles in the commercial soaker machines, much better results are obtained with $\frac{3}{10}$ per cent. of alkalinity as meta-silicate than with ten times as much alkali in the form of caustic soda. In the laundry the maximum production of suds is obtained with half the amount of soap when meta-silicate is present, and this visible factor seems correlated with the removal of dirt. Evidently we have yet to arrive at a complete and satisfactory understanding of what washing is, how to wash and what we ought to pay for it.

Old William Gossage laid the foundations of a much greater industry than he knew when he first began the manufacture of silicate on the Merseyside at Widnes. The molten glass still runs out of the ovens on his original site, but much more is understood to-day of the ratio of silica to alkali and the intrinsic virtues of the various qualities marketed.

More about Hydrocarbon Oils

REVERTING to a recent editorial note on duty on imported hydrocarbon oils (THE CHEMICAL AGE, May 16 and 23) we now learn that the Irish Free State Revenue Commissioners do not follow the practice of our own Revenue Commissioners. In view of the contemplated provisions of the Finance Bill, 1931, it is now announced that this Bill will restrict the application of the new Customs duty of fourpence per gallon, imposed on imported hydrocarbon oils, to hydrocarbon light oils of *mineral* origin, with the result that turpentine and essential oils of every description will fall outside the specification defining the oils liable to duty. The Bill will further make provision for exemption from duty of composite articles which contain as a part or ingredient any dutiable hydrocarbon light oil, but which in the opinion of the Irish Free State Revenue Commissioners are not substantially mixtures or blends of hydrocarbon light oils and are not suitable or intended for use as a substitute for any such oils or for subsequent recovery of same. Provision will also be made for the importation free of duty, under licence, of hydrocarbon light oils to be used for manufacturing purposes in the Irish Free State. The regulations are in clear and definite terms, which do not require the expert interpretation so often necessary on this side of the Irish Sea.

Hafnium

A COMMERCIAL future for hafnium will possibly be found in the radio industry, as the high melting point and electronic emissivity of this element has already led to the taking out of patents for its use in radio tubes and incandescent electric lamp filaments and for the cathode surface of such apparatus as X-ray tubes and rectifiers. This element was described in 1923 by Coster and Hevesy, who made their announcement after measuring the X-ray spectra of a number of zirconium minerals and finding some characteristic lines belonging to some element not previously known, but it was not until 1930 that the pure ductile metal was prepared by de Boer and Fast, who were successful in collecting some seventy grams of hafnium oxide of 100 per cent. purity. The United States Bureau of Mines have therefore been timely in producing Information Circular 6457, which surveys the geographical distribution of this new element and describes the method of separating hafnium from its associated element, zirconium, and the ultimate method of preparing pure hafnium salts.

Books Received

A HISTORY OF THE BRITISH CHEMICAL INDUSTRY. By Dr. Stephen Miall. London: Ernest Benn, Ltd. Pp. 273. 10s. 6d.

67TH ANNUAL REPORT ON ALKALI, ETC., WORKS. By the Chief Inspectors. Proceedings during the Year 1930. London H.M. Stationery Office. Pp. 41. 9d.

The Calendar

June 17	Faraday Society: "Michael Faraday." Dr. Robert L. Mond.	Albemarle Street, London.
17	Society of Glass Technology. 2 p.m.	Sheffield.
19	Physical Society. 5 p.m.	Imperial College of Science, London.
23	National Physical Laboratory: Visit of Inspection. 3–6 p.m.	Teddington.
July 13	Chemical Plant and Research Instruments Exhibition: Opening 11.30 a.m.	Central Hall, Westminster, London.
	July 13–19—SOCIETY OF CHEMICAL INDUSTRY JUBILEE CELEBRATIONS:	
14	Annual General Meeting. Presidential Address by Sir Harry McGowan. 10.30 a.m.	Royal Academy of Music, Marylebone, London.
14	"Recent Developments of the Society of Chemical Industry in Basle." Dr. G. Engi. 7 p.m.	Salters' Hall, St. Swithin's Lane, London.
14	"Dust Explosions." Professor R. V. Wheeler. 9 p.m.	Home Office Industrial Museum, Horseferry Road, London.
15	Presentation of Society's Medal to Dr. Herbert Levinstein. 10.30	Royal Academy of Music, London.
15	Annual Dinner. 7 p.m.	Wharncliffe Rooms, Great Central Hotel, London.
16	"Hydrogen Ion Concentration." Dr. H. Sörensen. 10.30 a.m.	Leathersellers' Hall, St. Helen's Place, London.

British Non-Ferrous Metals Research Association

New Headquarters and Central Laboratories

THE new headquarters and central laboratories of the British Non-Ferrous Metals Research Association, Regnart Buildings, Euston Street, London, were formally opened by Lord Rutherford, F.R.S., on Monday last, June 8, when a special exhibition of some of the results of recent researches was arranged for visitors.

The Need for Centralisation

Since its formation a little over ten years ago, the work of this association has steadily grown. At the start a small office and library in Birmingham with researches carried out at the National Physical Laboratory and at some of the Universities sufficed, but the ultimate establishment of a small central laboratory, through the hospitality of Birmingham University, enabled an enlarged programme of work to be undertaken. The scattered distribution of staff and researches, and its further prospective increase, however, led to a call for centralisation, and the Council of the Association ultimately decided to secure accommodation in London, where it would be able to concentrate the office work and administrative staff for development and research, together with the provision of a central laboratory and workshop.

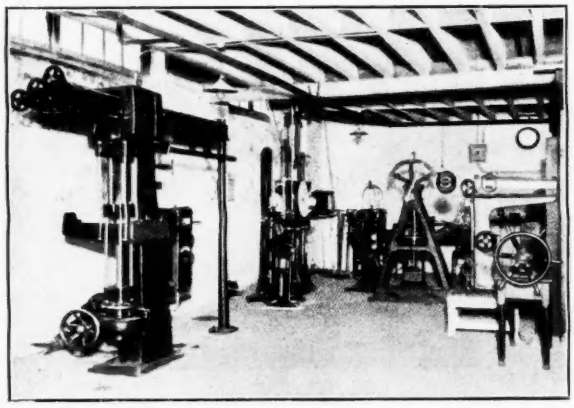


FIG. 1. PART OF THE MECHANICAL TESTING EQUIPMENT.

The choice of Regnart Buildings was a compromise, necessitated by the limited funds available and by the desire to start on as modest a scale as possible. The facilities offered, however, are an enormous improvement on the earlier scattered locations, but should the growth of the work of the Association during the next few years amount to a fraction of what has been experienced in the last five years even the present accommodation will undoubtedly become congested.

The building consists of a basement and three floors, each of which is approximately 2,600 square feet in area. The ground floor is occupied by general offices, library and information bureau. The basement is devoted to melting, casting, machine working, mechanical testing and the heavier work associated with the research and development activities. On the first floor are workshop facilities for lighter experimental work and a spacious exhibition room, at present occupied by exhibits to show the progress and results of a number of the researches which are in hand, whilst the second floor is fitted out as a general research laboratory, suitably partitioned off to provide for an additional analytical laboratory, photographic dark room, balances, microscopes and other instruments for physical measurements.

Mechanical Testing Equipment

The present equipment of the mechanical testing section in the basement (Fig. 1), includes machines necessary for investigating tensile strength (including creep tests at a rate of strain of 10^{-5} inch per hour or more), hardness, impact, cupping and bending tests. The melting and casting section, which forms a separate room in the basement, is equipped with a gas furnace and an electric resistor furnace of the crucible type, permitting 120 lb. of molten copper to be handled as one crucible charge. Here, a fume-extracting system with hinged hood for the gas furnace and side ducts is provided to assure adequate ventilation under casting conditions.

An overhead runway is also installed to facilitate the handling of the hot crucibles, which are conveyed to one end of the shop where casting may be carried out in a Durville casting apparatus, in chill or water-cooled moulds, or in sand forms. An electric annealing furnace, having a hearth capacity of 32 in. × 20 in. and capable of maintaining a constant temperature up to 1,000 C.° is also installed in an adjoining section of the basement.

A motor-alternator set (Fig. 2) has been installed to supplement the main supply of direct electric current. The latter is available at an exceptionally low cost, and provision has been made for a supply up to 140 k.w. for furnace work, thus permitting the use of almost any modern industrial electric furnace. The motor alternator set, in addition, will supply single or three phase current at frequencies varying from 13 to 53, and up to 500 volts per phase, so that advantages to be gained by the use of electric power will not be lacking.

In selecting the equipment installed throughout the building, nothing has been purchased of which direct and immediate use is not quite certain, since it is intended to provide apparatus as and when it may be required, for the particular researches which are undertaken. Apart from the special contributions of members which have helped to defray the cost of these new headquarters, the Association is also greatly indebted to members and others who have provided plant and equipment at a considerably reduced cost.

The Work of the Past Ten Years

Reviewing the work of the past ten years which have elapsed since the Association was incorporated in 1920, Dr. R. S. Hutton, D.Sc., the director, is of the opinion that the most important achievement has been the accumulation of experience of how to afford service to the industry. Some of the Association's scientific friends have from time to time suggested that the programme of work does not include sufficient fundamental scientific research. In so far as this is true it must be noted, however, that the main objective of the Association is the application of science to industry, and existing facts of the situation clearly show that many of the urgent problems of industry only require for their solution scientific knowledge and principles which have already been established. The metal industries, no less than others, are dependent on and are ultimately very greatly interested in extending the bounds of science, and it should be obvious that any contribution that the Association can make in this field will inevitably increase in proportion as successful research and application has demonstrated the need for new knowledge.

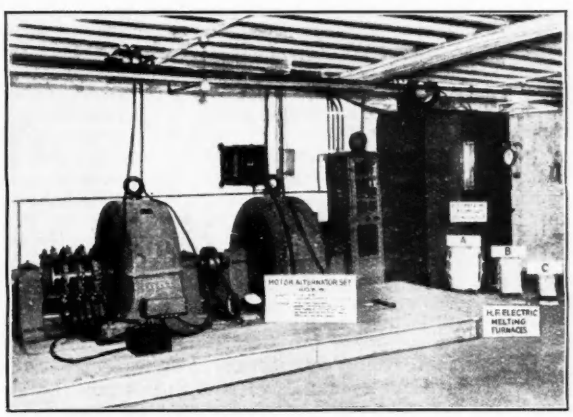


FIG. 2. MOTOR-ALTERNATOR SET AND HIGH-FREQUENCY FURNACE.

The researches which have been carried out and which

most nearly approach purely fundamental scientific investigation are those on the atmospheric corrosion and tarnishing of metals, carried out at the Royal School of Mines, and the study of the effect of impurities on copper, which has been in progress at the National Physical Laboratory for the past nine years. The atmospheric corrosion research has played an important part in changing the whole conception of corrosion resistance, and the protective character of extremely thin and often invisible films, demonstrated in this investigation, has opened up a prolific field of research which is rapidly leading to the explanation of complex corrosion phenomena and to the provision of materials affording improved service. Similarly, the study of the effect of impurities on copper has disentangled some of the most puzzling problems of the smelter and the user of copper. By laborious investigation of the individual effects of added impurities, and by studying the combined influence of two, three, or more elements simultaneously, very valuable knowledge has been acquired.

Other researches which have been completed, or which are still in hand, include the causes of cracking which sometimes occurs in lead-sheathed electric cable, the ultimate outcome of which has been the introduction of new ternary lead alloys; the cause and removal of red stains on brass; the improvement of the quality of sheet brass by a study of the strip ingot castings from which the metal is rolled; the requirements of furnace atmosphere control in order to assure "bright" annealing with the absence of scale and oxidation; the autogenous welding of copper; tin solders; die casting alloys; galvanising; condenser tube corrosion, and many other researches on tin, zinc, aluminium, nickel, copper and brass.

What measure of success the Association has met with has been very largely due to the unstinted self-sacrifice and devotion of its leading industrial members and the prominent scientific men who have served on its council and numerous committees. Viewed from inside the Association's staff may also claim to be justifiably proud of what has been accomplished bearing in mind the initial lack of any ready-made schemes and particularly the long-continued periods of industrial depression. One leading conception, however, has guided the Association throughout and that has been a basic and intense desire to find ways and means of building up an organisation to play a part in affording service to industry, taking into consideration the widely different outlook and the receptivity of individual members to scientific work and its potential value to them.

Chemicals for Ore Flotation

SUCCESSFUL selective flotation of lead and zinc sulphides as carried on at the new concentrator of the Treadwell Yukon Co., Ltd., at Tybo, Nevada, U.S.A., are described by W. H. Blackburn in Information Circular 6430, recently issued by the United States Bureau of Mines.

The ore treated is a partly oxidised complex mixture of galena, sphalerite, marcasite and pyrite in a siliceous gangue. After crushing to ⅜ in. it goes to two ball mills, each operating in closed circuit with a classifier, and the classifier overflow runs to the lead flotation system, where it is treated in a 16-cell machine and a 3-pan pneumatic cleaner. Here the reagents used are soda ash, sodium cyanide, zinc sulphate, ethyl xanthate, and cresylic acid. Tailings from lead flotation flow to the zinc circuit, which is equipped in a similar manner to the lead circuit. Here copper sulphate is used to reactivate the sphalerite which was depressed in the lead circuit; other reagents used include hydrated lime, ethyl xanthate, and pine oil.

The lead concentrates average about 60 per cent. lead, 4 per cent. zinc, and 87 ounces of silver per ton. The zinc concentrates contain about 47·5 per cent. zinc, 2·5 per cent. lead, and 14 ounces of silver per ton.

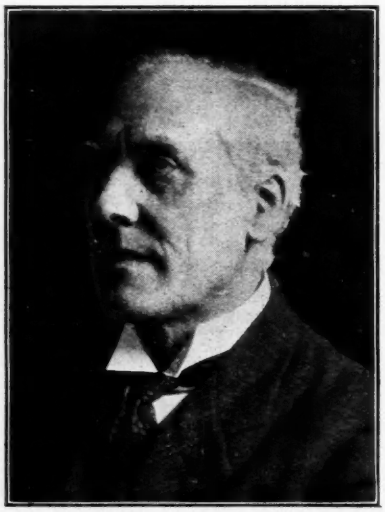
Market for Sheep Dips in Chile

ACCORDING to the United States Consul-General in Valparaiso, there is a good demand in Chile for coal tar preparations and arsenicals which are frequently used about two or three months after the sheep have been sheared. The principal sources of supply of prepared sheep dips are Great Britain and Argentina. Various American manufacturers have endeavoured to sell sheep dips in the Chilean market but they have been unable to interest suitable importers in their products.

A Pioneer of Safety Appliances

The Inventor of Submarine Escape Apparatus

THE "Davis" submarine escape apparatus, which has been used with such remarkable success on the occasion of the recent disaster to H.M. Submarine *Poseidon* whilst operating in the Chinese seas, is the invention of Mr. R. H. Davis, governing director of Siebe, Gorman and Co., Ltd., of 187, Westminster Bridge Road, London, S.E.1, who are well known as



MR. R. H. DAVIS.

manufacturers of diving equipment, industrial safety appliances, breathing apparatus, gas masks, etc.

Mr. Davis, whose portrait is given above, has devoted the whole of his life to devising safety apparatus for use under water, including deep-sea diving and problems associated with the escape of the crew from disabled submarines. He entered the firm of Siebe, Gorman and Co. soon after leaving school, and is now acknowledged to be the pioneer of the present system of safety apparatus in work being carried out beneath water. In addition to perfecting the ordinary equipment which is now used by divers, he is also the inventor of the "Davis" submersible decompression chamber, which enables divers to work under more comfortable conditions than hitherto, in that it obviates the monotonous decompression under water which is invariably experienced when diving at great depths.

The submarine escape apparatus is a portable self-contained diving suit. It consists of a flexible breathing bag, at the base of which and across the man's breast in a horizontal position lies an oxygen cylinder. He breathes in and out of the bag by means of a flexible tube with a mouthpiece, a nose clip being provided to seal the nostrils, whilst the eyes are protected by means of goggles. By a simple method he is able to equalise the pressure in the bag with the water pressure outside. Inside the bag is a canister containing chemicals for purifying the exhaled air and an automatic valve attached to the bag allows the surplus air to escape as the man rises to the surface and the pressure diminishes. When trouble occurs, if a man finds that his Davis equipment is empty of oxygen, he can fill it by means of a charging connection at the submarine's oxygen supply. If there is no time for that to be done, there are two small sealed capsules of oxygen inside the bag, arranged so that the oxygen can be liberated by breaking the necks of the capsules. Under these circumstances three potential sources of oxygen are therefore available.

Arsenic Production in Canada

THE production of arsenic in Canada in 1930 is reported by the Dominion Bureau of Statisties to have reached a total of 4,524,220 lb., valued at $129,527. Of this, white arsenic accounted for 2,750,680 lb. The content of arsenical concentrates and residues exported is estimated to have been 1,773,540 lb.

Annual Report on British Alkali Works.—(I)

The Problem of Noxious Effluents and Fumes

The 67th annual report on Alkali, etc., Works by the Chief Inspector under the Act (H.M. Stationery Office, pp. 41, 9d.) reviews in detail the work of the past year. The report for England and Wales is by Mr. W. A. Damon, with statistical appendices and notes on the oxidation of ferrous sulphate and on the corrosion of tar stills, and that for Scotland is by Mr. J. W. Young. The following extracts relate to England and Wales.

THE numbers of works registered in 1930 was 1,042, which involved the inspection of 1,911 separate processes. There was thus a reduction of 41 in the number of works, and of 64 in the number of separate processes.

The number of visits by District Inspectors to registered works during the course of the year was 3,450, and, in connection with these visits of inspection, 1,795 quantitative estimations of the noxious constituents in chimney and other gases, escaping from the processes in operation, were made. In addition, 212 visits were made to works, not on the register, for the purpose of investigating complaints and making other inquiries. Of these complaints, many were, as is usual, of a quite trivial nature, and were easily dealt with.

Noxious Fumes Problems

Complaint, for instance, was made against a works, on account of the escape of fumes, arising from the enamelling of copper wire. The wire is carried continuously through a machine, in which it is alternately coated with enamel and dried, so that it is ultimately covered with several layers of enamel. The drying is carried out in enclosed electrically heated stoves, which are draughted by a fan. The fumes, drawn from the fan and discharged to atmosphere, are pungent and distinctly objectionable owing to the presence of traces of acroleinic bodies. Washing the fumes both with water and with alkali was tried—the latter brought about some improvement but, probably on account of oxidation difficulties, removal of the nauseous constituents was not complete. The company have been recommended to pass the fumes through a small furnace, but, as some expense would be involved, they are unwilling to do so, and are directing their energies to the investigation of a different enamel, which is said to have less objectionable characteristics. Certainly, prevention is always better than cure, but, in the event of the investigations proving unsuccessful, it is thought that combustion of the products from the drying stoves will be the only practical method of avoiding nuisance in this particular case.

Inconvenience and discomfort, on account of excessive ammonia fumes, were stated to be caused in the vicinity of a London manufacturer's works. The District Inspector found that the evolution of ammonia from one of the processes in operation was unnecessary and wasteful. Satisfactory conditions were obtained by alterations to the plant.

A firm of tin manufacturers asked for the advice of the District Inspector with regard to the emission of hydrochloric acid from the works' chimney, as to which some local complaint had been made. A water scrubber had been employed, but its use had been abandoned, for it was said to have made matters worse on account of the entrainment and subsequent discharge of minute drops of acid. It has been recommended that the scrubber should be enlarged and, if possible, the height of the chimney increased.

The Castleford Explosion

On July 4, a serious explosion occurred at the works of Hickson and Partners, Ltd., Castleford, whereby 13 lives were lost, several men injured, and considerable damage caused to the work and adjoining property. A detailed report has already been issued by the Home Office, in which it is pointed out that although the normal process of mixing sulphuric and nitric acids is not to be considered dangerous, yet, in cases where acids recovered from previous nitrations are used, an element of danger is introduced, and in such a case a very strict chemical control should be exercised at every stage of the process.

Soon after this tragic occurrence, fear of a similar happening at another chemical work was aroused in the minds of local residents. An inquiry on this point was sent to the Home Office through the local Member of Parliament, and, added to it, was a general complaint about the emission of noxious fumes. No explosives are made at the work in question, so that it was at once possible to assure the complainants that the risk of explosion was negligible. The neighbourhood is highly industrialised and the escapes from the several processes in operation at the work certainly add to the general contamination of the atmosphere. The processes, however, are under good control, and the escapes are well within the limits imposed by the Alkali Act. Frequent inspections and external observations have been made, and the District Inspector has found nothing to which he can reasonably take exception.

Another serious complaint was made against a company on account of the emission of black smoke from their annealing furnaces. In view of the protection afforded to this process by the Public Health (Smoke Abatement) Act, 1926, the Local Authorities had felt themselves to be powerless. On visiting the work, the District Inspector found that the furnaces were of the muffle type, and that there was, therefore, no inherent necessity for the maintenance of a smoky fire. In fact, he demonstrated that, by careful stoking, much of the smoke could be avoided. As complaints continued to be made, he advised the alteration of the furnace so as to burn coke instead of coal. This has now been done and is proving quite satisfactory.

Pulverised Fuel at Billingham

Reference was made in last year's report to the complaints of grit and dirt issuing from the chimneys of the Synthetic Ammonia and Nitrates Co.'s power station at Billingham. The trouble arose through the use of pulverised fuel for steam-raising purposes. After a great deal of experimental work, the company decided to instal several units of a patent washer, which consists of a series of tubes of special design, placed in a chamber through which the gases must pass. The tubes are vertical and are in " staggered " relationship to one another. Water is allowed to flow up the tubes and overflows therefrom in a thin film over the outer surfaces. A great deal of trouble was experienced at first owing to the adhesion of grit to the sides of the tubes. In order to overcome this difficulty, provision had to be made for a much increased flow of water, and this caused further delay. It was difficult to persuade complainants to be patient and to convince them that the trouble was being actively combated. The installation, however, is now complete, all the chimneys being served with washers.

Great inconvenience was undoubtedly caused, for such conditions, arising from the extensive use of pulverised fuel, had not been foreseen, but, although, owing to trade depression, the boilers are not at present all in commission, it is believed that, even on full load, the washers will operate satisfactorily.

An interesting development, in this connection, is the proposal to utilise a similar type of washer for the elimination of the sulphur oxides from the boiler flue gases at an electric power station. From the researches carried out at the instigation of the Government Chemist's Committee, it would appear that, to effect a high percentage removal, it will be necessary to introduce some form of alkali into the washing water.

Coke Oven " Green Gas "

Several complaints have been made relating to the quantities of smoke evolved during the charging of coke ovens. This " green gas " (as it is called) is also evolved during the charging of some gasworks' retorts, but in the latter case it is more diffused and therefore not so noticeable.

On the newer coke ovens, it is usual to fit steam ejectors in each ascension pipe. During the period of charging, steam is turned on and additional suction is thereby applied to the particular oven. Where wet coal is used and if the exhauster is sufficiently sensitively governed to respond quickly to the extra load, a marked reduction may be noticed in the amount of green gas discharged to atmosphere. Greater difficulty is experienced when dry coal is charged, for, in such case, the evolution of gas is particularly heavy and sudden, commencing immediately charging is started. Several attempts

have been made to improve matters, and in some cases a measure of success can be recorded. It is felt, however, that a great deal more could and ought to be done to improve conditions in this respect.

Perhaps the most difficult problem in connection with smoke abatement is the heat treatment of high grade steels, so largely practised in Sheffield. In this class of work it is essential that treatment should be applied in such a way as to avoid, as far as possible, surface scaling and decarburisation.

Trade Conditions

As regards trade conditions during 1930, an atmosphere of depression has prevailed during the whole of the twelve months. There has been a general decline, which was particularly marked toward the end of the year. The chemical trade, although perhaps to a smaller extent than others, has found it necessary to curtail output owing to the lessened demand from the many consuming trades, practically all of which are experiencing a severe slump.

In many quarters a spirit of optimism prevails that a revival of trade is at hand. There is some evidence that such a feeling is justified and, in the meantime, it behoves manufacturers to anticipate events by the reconstruction of their plant, in order to enable them the more readily to compete with continental and other producers in due course. Many manufacturers are actively pursuing this policy and, on the whole, one can say that the resources of the country, so far as chemical plant is concerned, are wider than they were a year ago.

NUMBER OF WORKS REGISTERED.

	1930.	1929.	1928.
Alkali works	36	39	39
Scheduled and other works	1,006	1,044	1,057
Total	1,042	1,083	1,096

NUMBER OF SEPARATE PROCESSES OF MANUFACTURE UNDER INSPECTION.

Alkali:	1930.	1929.	1928.
(*a*) Saltcake	31	34	35
(*b*) Copper (Wet Process)	7	8	7
Cement	38	40	37
Smelting	40	42	47
Sulphuric Acid	90	92	92
Sulphuric Acid (Class II)	68	71	71
Chemical Manure	70	71	75
Gas Liquor	79	79	75
Nitric Acid	64	64	64
Sulphate and Muriate of Ammonia	436	457	470
Chlorine	48	47	48
Muriatic Acid:			
(*a*) Muriatic acid other than Alkali Works	55	61	60
(*b*) Tinplate flux	66	68	67
(*c*) Salt	35	36	38
Sulphide	66	73	74
Alkali Waste	2	2	2
Venetian Red	6	6	6
Lead Deposit	19	20	21
Arsenic	26	26	28
Nitrate and Chloride of Iron	27	28	31
Bisulphide of Carbon	6	7	6
Sulphocyanide	—	—	—
Picric Acid	4	4	3
Paraffin Oil	9	6	6
Bisulphite	47	50	46
Tar	341	357	361
Zinc Extraction	11	9	9
Benzene	157	155	142
Pyridine	42	42	41
Bromine	15	14	14
Hydrofluoric Acid	6	6	6
Total	1,911	1,975	1,983

AMMONIA PRODUCTS MANUFACTURED.

Expressed as Sulphate (25¾ per cent. NH_3)—Tons.

From Liquor Produced in—	1930.	1929.	1928.
Gasworks	142,271	142,017	145,066
Other Works (including Coke Ovens, Iron Works, Producer-gas, Synthetic, etc.)	566,960	698,466	404,450
Total	709,231	840,483	549,516

Of the total quantity of ammonia products, the equivalent of 51,662 tons was manufactured as concentrated ammoniacal liquor; the balance, 657,569 tons, consisted of other ammonia products (sulphate, chloride, nitrate, etc.). Tar distilled, 1,652,826 tons; pitch produced, 443,465 tons.

(To be continued)

Business Conditions in Australia

Messages to Sir Ernest Benn

IN view of the present condition of Australian business and finance and the keen interest which investors and business firms are taking in the situation, some replies which Sir Ernest Benn has just received from Australia in acknowledgment of messages, which he addressed by the first Air Mail to friends in the colony, will appeal to many of our readers.

Mr. J. N. Bell, secretary of the Sydney Chamber of Commerce writes: "It may be said with safety that our financial troubles are purely those in connection with Government, and although at the moment some move is being made to end the wretched business, they appear to drift on, and in consequence, each day we are financially worse off."

Mr. P. C. Oak, secretary of the Melbourne Chamber of Commerce: "Your reference to politics was appreciated by my Council. Unfortunately, Australia, at the present time, is passing through very difficult times, the difficulties being intensified to a large extent by politics. However, we confidently believe that in due course we shall emerge successfully and that Australia will enter upon a new era of prosperity."

Mr. George Robertson (Angus and Robertson, the Sydney publishers): "'Squandermania' is the word! Thank you for that addition to our current vocabulary."

Mr. D. F. King, Secretary of the Brisbane Chamber of Commerce: "Our political leaders do not seem to realise the potentialities of this wonderful country and that all it needs is good sound commonsense legislation, and its ills will vanish with the shadows of the night. We appreciate the spirit which prompted you to write and echo your hope that both business and closer friendship will result from our being nearer neighbours."

Mr. J. M. Forsyth, managing director of Dymock's Book Arcade, Ltd., Sydney: "Our legislators at the moment are doing an immense amount of harm. There is not the slightest doubt that when an election does occur they will be put out of office, and Labour will be set back in Australia for 20 years."

Kelp Manufacture in Ireland

IN the Irish Free State Parliament recently the Minister for Lands and Fisheries informed the House that he had received a report from the State Laboratory on winter kelp which asserted that kelp produced during the winter months and burnt under the proper conditions would fetch a price of £10 per ton. The minister pointed out that by this the kelp-producing industry could become an all-the-year-round one and a reasonably steady output could be guaranteed. He added that in the interests of keeping up the standard of the quality of the kelp produced it would be marketed through his Department and those who did not wish to make use of the organisation to be provided naturally could not expect to get the best prices. The Minister also stated that a publicity scheme for Carrigeen Moss as a foodstuff was being formulated, and supplies would be available to the public about the end of July.

Mining of Gypsum in Ireland

AN application made by the Farney Development Co., Ltd. for the sum of £5,000 for the development of gypsum mines at Kingscourt, Co. Cavan, has been withdrawn, according to an official statement of the Irish Free State Government. The application was made under the Trade Loans (Guarantee) Act, 1924, which has been of considerable assistance for the development of natural resources in Ireland. It is considered likely, however, that when the Mines and Minerals Bill is introduced into the Free State, Parliament provision will be made for loans to be made in addition to the granting of leases for the development of the natural resources of the country. No information is available as to the extent or quality of the gypsum deposits referred to above.

Trade with Northern Europe

A MEMORANDUM containing hints for commercial visitors to Esthonia has been issued by the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1, from whom a copy may be obtained on application, quoting Ref. C. 3558. Similar memorandums have been issued in respect of Denmark (Ref. C. 3561) and Finland (Ref. C. 3552).

A Fleet Street Wedding

Mr. Glanvill Benn and Miss Newbald

FLEET STREET had a function of its own on Thursday of last week, when Mr. E. Glanvill Benn and Miss Catherine Newbald were married at St. Dunstan's-in-the-West. Instead of following the beaten track and taking their festivities to the West End, these two members of the publishing fraternity decided to celebrate their wedding in a publishers' atmosphere. St. Dunstan's-in-the-West is the parish church of Bouverie House, where Mr. Glanvill Benn is the managing director of Ernest Benn Ltd., and where Miss Newbald gained her experience in literary work. Canon H. Maynard Smith (assisted by the Rev. Dr. A. J. M. Macdonald, vicar of St. Dunstan's) who officiated, is one of the most popular authors of thrillers, and has for long been associated with the bridegroom, who publishes his work. The musical part of the service was under the direction of Mr. F. Washington Flatt,

MR. AND MRS. GLANVILL BENN.

publisher of *The Nursery World*, in which department the bride obtained her first Fleet Street experience. The historic hall of the Stationers' Company was kindly placed by the Master and Wardens at the disposal of the bride and bridegroom, and their relatives and friends, for the reception.

The bride, who was given away by her father, wore a graceful gown of soft white georgette with a cowl neckline and a vest of silver lamé, veiled with georgette. The draped skirt had gauged flounces. The veil was of Brussels lace, and the bride carried a bouquet of pink roses. The four bridesmaids were Miss Margaret and Miss Mary Newbald (sisters of the bride), and Miss Elizabeth and Miss Julia Benn (sisters of the bridegroom). They wore Victorian dresses of cherry red chiffon. Mr. Christopher Benn was best man. The honeymoon is being spent in Devonshire. The distinguished party of guests included Sir Ernest and Lady Benn, Mr. and Mrs. Newbald, Mr. and Mrs. Wedgwood Benn, Mr. and Mrs. Henry Benn, Mr. and Mrs. John Benn, Sir Hugh Bell, Mr., Mrs., and Miss Glanvill, Mr. and The Hon. Mrs. Eliot Hodgkin, The Hon. Claud Lintott, Sir Donald and Lady Maclean, Sir Robert and Lady Welsford, Sir Maurice and Lady Hankey, Sir Archibald and Lady Hurd, Lady McFadyean, Lady (Ernest) Clarke, Sir Percy and Lady Mackinnon, Mr. and Mrs. John Drinkwater, Mr. Stephen Graham, Mr. and Mrs. Runciman, and others.

A Bookman's Column

FROM the Federal Council for Chemistry comes an important volume published by the Union Internationale de Chimie, entitled *Rapports sur les Hydrates de Carbone (Glucides)*. The price is 50 francs (9s.), and the book is obtainable in London from Hachette and Co., 18, King William Street, H. K. Lewis and Co., 136, Gower Street, and David Nutt, 212, Shaftesbury Avenue. It contains the papers presented at the 1930 conference at Liege, and they are well worth publishing, as will be seen from the mere mention of the subjects and the authors: Historical resume of the chemistry of the oses, especially since Emil Fischer, by Professor Gabriel Bertrand, Paris; Ring structure in the mono-, di-, and polysaccharides (holosides), by Professor W. N. Haworth, Birmingham; Correlations of optical rotatory power and structure in the sugar group, by Professor Claude Hudson, Washington; Mutarotation in the sugar group, by Professor T. M. Lowry and Dr. Smith, Cambridge; Starch and its decomposition products, by Professor Pictet, Geneva; Structural problem of the polysaccharides, by Professor Karrer, Zurich; The molecular weight of the complex polysaccharides, by Professor Pringsheim, Berlin; The application of Röntgen rays in the study of polysaccharides and their derivatives, by Professor H. Mark (I.G. Farbenindustrie); The relation between the properties and the industrial applications of cellulose, by Professor Henser, Hawkesbury, Ontario; The colloidal state of cellulose and its derivatives, by Jacques Duclaux, Pasteur Institute, Paris; The finished properties of artificial silks and their relation to the raw materials and methods of manufacture, by Dr. Viviani, Italy. These reports are of great scientific and practical interest, and all students of the subject will be indebted to the publication committee for making them conveniently available.

* * *

THE *Oil and Petroleum Year Book* for 1931, by Walter E. Skinner (7s. 6d.) is recognised as the international reference work on oil and allied companies operating in all parts of the world. Covering 450 pages, it contains full particulars of 620 English and foreign companies. A useful feature is the list of 398 trade names of the petroleum products marketed by the various companies.

* * *

THE third volume of the second edition of Lunge and Keane's *Technical Methods of Chemical Analysis* (Gurney and Jackson, pp. 678, price £3 3s. net.) has now been published. As in the preceding volumes of this present edition, all the sections have been thoroughly revised, and several have been completely re-written so as to include the newer methods of analysis, especially those which have been worked out and accepted in connection with modern developments of chemical industry. The sections on "Clays and Clay Products" have been rearranged under the heading of "Clays, Ceramic Products, and Refractories," and the methods of examination have been subdivided into chemical and physical. The section on "Glass" has been considerably extended, and in that on "Air" the most recent methods of determination of gaseous and other impurities have been included. Throughout the remaining sections special attention has been given to the co-ordination of the subject matter and to the inclusion of the latest British and American methods of analysis.

* * *

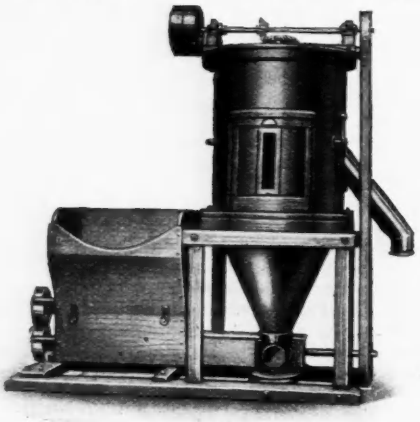
A Century of Wood-Preserving, edited by Sir Harold Boulton (P. Allan and Co., pp. 150, 8s. 6d.), is an attractive volume, mainly historical in character. About a hundred years have passed since John Bethel first concerned himself with the creosoting of timber, and in the appendices to the book, one of its most interesting features, particulars are given of his patent of 1838, of S. B. Boulton's patent of 1879, and similar early matter on the subject. The book proper consists principally of papers by S. B. Boulton on "The Antiseptic Treatment of Timber" (1884), and Sir Samuel Boulton on "Timber Preservation" (1909), a chapter by Hubert Fergusson on "Later Developments in Wood Preservation," with notes by the editor connecting these features up into something like a history. The editor's hope is that the volume, while not pretending to be either a technically scientific manual or a complete historical work, will be of interest and use to all interested in wood preservation.

C

A New Self-Container Sifter and Mixer

A NOVEL arrangement of sifter and mixer, complete with packing-off spout, which can be installed in positions where head room is limited, has been introduced by A. R. Tattersall and Co., of 75, Mark Lane, London, E.C.3.

In this machine the internal screw is arranged to act as an elevator, and this enables the machine to be fed by a dump



THE "GEYSER" COMBINED SIFTING AND MIXING MACHINE.

hopper and horizontal worm conveyor on the ground level, thus eliminating an external elevator to feed the machine, or the necessity for cutting through the floor above for feeding purposes. Into this dump hopper a sifter has been introduced, comprising a brush revolving against a wire gauze screen, which helps to break up any lumps of material that have formed due to the presence of excess moisture, storage and other factors, and also eliminates such items as string, fluff and similar matter which often unavoidably reaches the finished product. By the operation of a simple valve, the vertical screw inside the machine can be made to feed, mix or discharge by the bypass spout into a conveyor on the ground floor. The total height of the complete assembly is 7 ft. 6 in. The capacity of the machine is 5 cwt. per charge.

I.C.I. Wages Problem

"Fairness and Loyalty" of the Workers

THE first page of the *I.C.I. Magazine* for June contains the following note on the wages problem :—

"Never before has the subject of wages and salaries been raised in this magazine, but this is an occasion when we should be failing in our duty if we attempted to ignore the issue. Faced with a situation which makes every penny of importance, the directors have been compelled to agree to ask the workers on the chemical side of I.C.I., through the appropriate trades unions, to accept a reduction in wages. The recent announcements by the chairman, Sir Harry McGowan, and by Lord Melchett, director in charge of staff and labour, give the full reasons for the step which has been taken. In every I.C.I. factory concerned, the chairman of the works council has placed the full facts of the case before his council in order that the workers should be informed through their own representatives.

"Naturally, no one welcomes a general reduction of wages and salaries, but it is clear that the decision, if regarded as fair and just, will be accepted on the understanding that every worker, whether technical, commercial, or operative, is bearing an equitable share of the burden. It is impossible to speak too highly of the spirit of the factories at the present time. Though short time has been common and though it has been generally known that wage reductions were under discussion. In some of the smaller factories the employees have worked during dinner hours to fill urgent orders received from agents and customers, even though it has been known to the workers that, as far as could be seen, no work would be available for them when the rush was finished."

Chemical Matters in Parliament

Extraction of Oil from Coal

IN the House of Commons on Tuesday last, June 2, Mr. Campbell (Bromley) asked the Secretary of Mines when and under what circumstances the State, in the shape of the British Government of the day, first took into consideration the question of the extraction of oil from coal by any form of carbonisation process; in what year negotiations were carried on with any industrial concern willing to experiment; and what State assistance in each year has been given to such experiments since their initiation?

The following statement was given by Mr. Graham, in the Official Report, as reply :—

"The first serious consideration given on Government account to the extraction of oil from coal was in connection with the Royal Commission on Fuel and Engines for the Navy, which sat during 1912–1913 under the chairmanship of Lord Fisher, and it was largely due to the consideration then given to the question that it was subsequently decided to establish a Government Fuel Research Station. An account of this early development appears in two reports of the Fuel Research Board, covering the years 1918–1919, and 1920–1921.

"As regards the second part of the question, many representations have been made from time to time to the Government that they should give direct financial assistance to the commercial development of processes designed to produce oil from coal. There have been the following instances in which such assistance has been given to commercial undertakings :—

"(1) In 1922 the Department of Scientific and Industrial Research made a grant of £2,500 to Low Temperature Construction, Ltd., to assist in the development of an experimental retort.

"(2) In 1924 the Government instituted arrangements for testing, in approved cases, low temperature carbonisation plants which were considered promising and were of adequate scale, without charging a fee for the test.

"(3) In 1927 the Government undertook to guarantee the capital and interest on a loan not exceeding £100,000 for the purpose of carrying out an experiment in low temperature carbonisation on a commercial scale at the Richmond Gas Works belonging to the Gas Light and Coke Co."

Iron and Steel Industry

IN the House of Commons on Wednesday, June 3, Mr. O. Lewis (Colchester) asked the President of the Board of Trade the output of steel ingots and castings in Great Britain during the month of April in the years 1930 and 1931 respectively.

Mr. W. R. Smith (Parliamentary Secretary, Board of Trade) : According to the statistics collected by the National Federation of Iron and Steel Manufacturers, the output of steel ingots and castings in the United Kingdom amounted to 696,100 tons in April, 1930, and 397,400 tons in April, 1931.

Mr. Lewis : Can the hon. gentleman tell us what, if anything, the Government are going to do to increase output?

Mr. Smith : I think my right hon. friend, the President of the Board of Trade, has stated several times that he is in consultation with the industry with a view to taking steps that may be helpful in that direction.

Iraq (Oil-Pipe Line)

ON Wednesday, June 3, Mr. Smithers (Chislehurst) asked the Under-Secretary of State for the Colonies whether the oil-pipe line which is to be laid from the Iraq oilfields to Haifa will be of British materials and construction throughout.

Dr. Shiels (Under Secretary of State, Colonial Office) : The pipe line will be constructed by the Iraq Petroleum Company either directly or by a subsidiary company formed for the purpose. The company's agreement with the Iraq Government does not provide for the exclusive use of British materials.

Sugar Beet Industry

ON Monday, June 8, Mr. Graham White (East Birkenhead) asked the Minister of Agriculture what is the average quantity of sugar produced per acre of sugar-beet in England?

Dr. Addison : The average quantity of commercial sugar produced per acre of sugar-beet in Great Britain was 2,838 lb. in 1929 and 2,724 lb. in 1930.

From Week to Week

On Wednesday evening, June 10, Dr. Herbert Levinstein broadcast an address on "Colour: Its Significance," the fourth of a series of talks on chemistry in industry.

The honorary degree of D.Sc., Birmingham University, has been conferred on Professor J. S. Haldane, director of the Mining Research Laboratory at Birmingham University.

The National Canning Co.'s new factory at Spalding will start canning operations within the next fortnight. This factory has been built in close proximity to the Spalding Sugar Beet Factory.

Recent wills include:—Thomas Meakin Farmiloe, managing director of George Farmiloe and Sons, Ltd., paint and lead manufacturers, and a member of the London Metal Exchange, £164,413 (net personalty £130,214).

Fire broke out on Saturday last, June 6, at the research station of Imperial Chemical Industries, Jealotts Hill, near Maidenhead. Films and photographic records representing two years' research work on the effect of various chemical fertilisers were destroyed.

According to the United States Assistant Trade Commissioner at Tokyo, the Showa Fertiliser Co. has started production at its new ammonium sulphate plant at Kawasaki. With three of the six units of the plant in operation it is estimated that the daily production (sulphate basis) will be 300 tons.

Some useful data on the calcining of magnesite is included in *Information Circular* 6437 recently issued by the United States Bureau of Mines. Caustic calcining and deadburning, and magnesite brickmaking are dealt with, but the major portion of this circular relates to sources of supply for the crude magnesite.

Miss Ruth Draper has very kindly promised to give a special matinee on June 26 on behalf of the John Benn Hostel and Milner Hall. Seats at special prices, for which application should now be made, are obtainable at the Box Office of the Vaudeville Theatre or from Sir Ernest Benn, Bouverie House, Fleet Street, E.C.4.

White lead exported from the United States in 1930 amounted to a total of 13,092,212 lb., valued at $923,281. Of this quantity sales to the United Kingdom accounted for 9,499,448 lb., valued at $632,060, a gain of over 40 per cent. in quantity and 30 per cent. in value as compared with shipments during 1929.

Alfred Thompson and George Shaw, employed at the works of the Yorkshire Dyeware and Chemical Co., Black Bull Street, Hunslet, Leeds, were seriously injured on Friday, June 5, when an explosion took place in the colour-mixing department. Machinery was damaged by the explosion, and slates were blown from the roof. The works staff extinguished the fire which followed the explosion.

The following Empire timbers have been approved by the London County Council for use as fire resisting hardwoods: Andaman Padauk; Iroko, Odum or African Teak from Nigeria and the Gold Coast; African Walnut from Nigeria; Mora and Crabwood from British Guiana. Further information concerning these timbers may be obtained at the Imperial Institute, South Kensington, London, S.W.7.

Work has not yet proceeded far enough to enable the value of the recently discovered radium deposits at Great Bear Lake, Canada, to be definitely ascertained. At the annual meeting of the Eldorado Gold Mines, Ltd., held at Toronto, it was merely stated that the company expects to market a grade of ore which will yield 0·1 gram for each ton treated. Veins of ore at present uncovered total 2,700 feet, and in some places these veins are 6 inches in width.

Arrangements have been completed whereby the business of Stein Brothers, Ltd., of Ocean House, 24–25, Great Tower Street, London, will be merged with that of Honeywill Brothers, Ltd., of 79, Mark Lane, London. The above companies will be carried on under the name of Honeywill and Stein, Ltd. For purposes of convenience it has been found advisable to move into larger offices, and the business will be conducted as from June 15, at London House, 3, New London Street, London, E.C.3. The telephone number remains as hitherto: Royal 8724/5.

According to the *Northern Miner* (Toronto) the Ontario Radium Corporation, Ltd., are now developing a deposit of radioactive ore on its property near Wilberforce, Ontario.

It is reported that a new glass factory, capitalised at 27,000,000 dinars (about $475,350), financed by Czechoslovak and French capital and to be known as the First Mechanical Glass Co. of Belgrade, is to be opened near Belgrade, Yugoslavia.

The production of bromine in France during 1930 amounted to 565 metric tons. Of this quantity 258 tons were produced by the State potash mines, 200 tons by the Kali Sainte-Therese Potash Co., and 107 tons by the Cie. Alais Froges et Camargues (Pechiney).

According to information received from Cologne, the formation of a German artificial silk producer's syndicate is now assured. A meeting of producers was arranged to be held in Berlin during the week. It is anticipated that the Syndicate will commence work on July 1, its headquarters being in Berlin.

The Director of Mines, South Australia, requested the assistance of the Commission on Undeveloped Mineral Resources in finding an outlet for manganese dioxide, of which an allegedly extensive deposit exists at Woocalla, South Australia. The Commission's investigation has indicated that the prospect of profitably marketing in Australia the Woocalla product is not encouraging at present.

It is believed that a dozen firms in the Bolton district will be affected by the decision of the Bleachers' Association to close down a number of their bleachworks as part of their policy to economise and stop the running of redundant machinery. In these circumstances a large number of employees will be permanently thrown out of work, and there is little hope of them being absorbed elsewhere in the district.

In order that the advantages of road tar should be more widely known in Scotland, the British Road Tar Association are exhibiting at Stand No. 30 at the Highland Show, Edinburgh, on June 23–26. The Association invites all who are interested in the construction and maintenance of roads to visit the stand, where every opportunity will be given to discuss questions relating to the use of tar for roads with technical representatives, who will be in attendance.

Four additional directors representing foreign groups were elected to the Board of the Hirsch Copper Works, at their general meeting in Berlin, on Tuesday last, June 9. These were MM. G. Velge (Brussels) and I. Lemann (Antwerp), of the Belgian Katanga group, and Mr. Smith (Paris) and Mr. L. B. Smith (Birmingham), representing Imperial Chemical Industries, Ltd. It was reported that the output of the works had up to the present remained at the same level as in 1930, about 2,800 tons of copper being produced each month, one-quarter of this quantity being for export.

It is announced in the annual report of the Alkali Inspectors for the past year that no fewer than three members of the staff—Messrs. Carter, Littlefield and Picken—have had to undergo surgical operations. The treatment has in each case been successful, and the three inspectors may now be said to have recovered. Mr. Littlefield's medical attendants, however, have indicated that it would be inadvisable for him to attempt to continue his official duties, and he has therefore given notice of his desire to retire at an early date. Mr. Littlefield has served on the alkali staff for 22 years, and although the necessity for his retirement is recognised by his colleagues, it is, nevertheless, keenly regretted.

At the Liverpool Assizes on Wednesday, June 10, damages amounting to £707 were awarded to Miss Hilda Robinson, of Sefton Park, for injuries alleged to have been caused by the presence of poisonous dye in a frock. Professor Roberts, the Liverpool City analyst, found that the frock was dyed with paraminophenol. Defendant, a Liverpool costumier, who sold the frock to Miss Robinson, obtained an indemnity against a London firm, who obtained an indemnity against another London firm, the manufacturers of the frock. A fifth party action against a Swiss firm, who supplied the material, is to be heard later.

Obituary

Colonel C. T. Heycock, for many years Goldsmiths' Reader in Metallurgy in the University of Cambridge, at the age of 72.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Accepted Specifications

344,545. ALKALI HYDROXIDE. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, December 15, 1928.

Solid alkali carbonate is added to a suspension of strontium or barium hydroxide, and the alkaline earth carbonate separated by continuously working filters. Concentrated caustic alkali lyes are obtained. Alkaline earth carbonate is calcined to obtain the oxide, which is used again. The lyes obtained contain at least 200 grams of alkali hydroxide per litre.

344,554. CATALYTIC PRODUCTION OF ACETALDEHYDE. G. B. Ellis, London. From C. F. Boehringer and Soehne, Waldhof, Mannheim, Germany. Application date, December 16, 1929.

Acetaldehyde is produced by dehydrogenation of ethyl alcohol using a catalyst consisting of copper with 1 per cent. of ceric oxide.

344,558. DYES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, December 17, 1928.

Pyrazol-anthrone, or 1:5-dipyrazol-anthrone is condensed with an *o*-halogen-aldehyde of the benzene, naphthalene or anthraquinone series, and the product treated with an alkaline condensing agent. Thus, pyrazol-anthrone is condensed with *o*-chloro-benzaldehyde and the product treated with caustic potash and alcohol. The product dyes cotton yellowish-orange.

344,576. OXYGENATED ORGANIC COMPOUNDS; HYDROGEN, AND AMMONIA. Du Pont Ammonia Corporation, Wilmington, Del., U.S.A. Assignees of J. A. Almquist, 1007, Market Street, Wilmington, Del., U.S.A. International Convention date, December 31, 1928.

In the production of methanol and other oxygenated organic compounds from carbon monoxide and hydrogen, the compressed gases are first warmed by passage between the catalyst chamber C and wall D, and are then passed to a purifying catalyst in the chamber A. Reaction products are removed at H, and the temperature also regulated, and the gas then passes to the main catalyst C, which may consist of a mixture of zinc and chromium oxides. The purifying catalyst for the removal of organic sulphur compounds may be a mixture of zinc and copper oxides, and its temperature may be controlled by means of a by-pass pipe L. In a modified form, the purifying catalyst may be in a chamber E, arranged within the main catalyst C, and the products of the purification are removed in the chamber P.

FIG. 1.

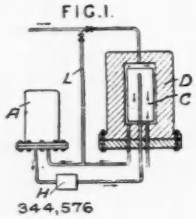
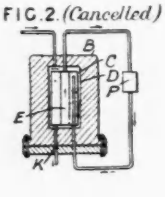


FIG. 2. *(Cancelled)*



344,576

344,601. DYHYDRATING CHLORIDES. Soc. de Produits Chimiques des Terres Rares, 129, Avenue des Champs Elysées, Paris. International Convention date, January 18, 1929.

Magnesium, cerium, thorium and other chlorides are partly dehydrated so that they possess a porous structure, and are then passed through a vertical jacketed chamber through which a current of hydrogen chloride passes upwards whereby complete dehydration occurs. The temperature is such that no softening occurs, *e.g.*, 400° to 450° C., up to 620° C. in the case of magnesium chloride.

344,592. 1 : 1 : 2-TRICHLORETHANE. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, January 31, 1929.

A mixture of acetylene, chlorine, and hydrogen chloride react to form 1 : 1 : 2-trichlorethane in the presence of contact materials such as coke, quartz, clay, rock salt, active carbon, silica or pumice, which may be impregnated with mercuric chloride. Risk of explosion is avoided by effecting the reaction in constricted spaces or in the presence of an excess of acetylene or hydrogen chloride or inert gases. An explosive gaseous mixture may be treated in a vessel filled with coke breeze or sand heated to 200° to 250° C., and non-explosive mixtures are heated in the presence of contact materials to 80° to 150° C. The trichlorethane is separated in a cooler or washer, and the residual gases returned after adding fresh gases.

344,614. PURIFYING OILS, PHENOLS. South Metropolitan Gas Co., and H. Stanier, 709, Old Kent Road, London. Application date, January 31, 1930.

Phenol is extracted from tar oils and other hydrocarbon oils by means of an organic base insoluble in the oil, and of the kind obtained by interaction of an alkylene oxide and ammonia, or the hydrochloride obtained by the interaction of an alkylene monochlorhydrin and ammonia, *e.g.*, mono-, di-, and tri-ethanolamines. The extract is diluted with water, and then saturated with hydrogen sulphide or carbon dioxide to recover the phenol or other tar acid. The organic base may be recovered by concentrating the remaining solution. Examples are given of the treatment of a crude low temperature tar distillate boiling up to 250° C., and containing 30 to 40 per cent. of tar acids, and also a mixture of gas oil and crude naphtha distillate from high temperature coal tar.

344,627. DYES AND GERMICIDES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, February 12, 1929.

3 : 6-diamino-acridine is heated with a dialkyl sulphate or alkyl ester of an aryl sulphonic acid to 90° to 120° C. to obtain compounds which have a high bactericidal power and dye tannin-mordanted cotton and leather orange shades. An example is given.

344,638. CATALYSTS. C. C. Tanner, Norton Hall, The Green, Norton-on-Tees, and Imperial Chemical Industries, Ltd., Millbank, London. Application date, February 20, 1930.

A catalyst for producing acetaldehyde, with or without acetic acid, from acetylene and steam is obtained by adding ammonia to a mixture of ammonium molybdate and bismuth nitrate. The precipitated bismuth ammonium molybdate is dried, formed into pellets, and heated to 350° C.

344,675. AROMATIC ALDEHYDES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany, and W. W. Groves, London. Application date, March 15, 1930. Addition to 219,676. (See THE CHEMICAL AGE, vol. xi, p. 331.)

1-oxy-2-ethoxybenzene is subjected to alkaline condensation with chloral, and the product subjected to saponification and oxidation by means of a reducible heavy metal compound. The oxidation may be effected by means of copper carbonate subsequent to hydrolysis, and by copper oxide simultaneously with hydrolysis. The product is 3-ethoxy 4-oxybenzaldehyde.

344,690. ALDEHYDE-AMINE CONDENSATION PRODUCTS. Naugatuck Chemical Co., Elm Street, Naugatuck, Conn., U.S.A. Assignees of S. I. Strickhauser, 318, Lafayette Avenue, Passaic, N.J., U.S.A. International Convention date, April 17, 1929.

Aldehyde-amine condensation products are mixed with a small amount of a polyhydroxy or substituted polyhydroxy aromatic compound such as catechol, resorcinol, pyrogallol, hydroquinone, mono-, or di-chloro-hydroquinone or dinitroso-resorcinol to prevent deterioration. The treatment of the condensation product of heptaldehyde and aniline with hydroquinone is described.

344,777. DYES. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges. Application date, October 2, 1929.

The products obtained by the process of Specification No. 322,281 (See THE CHEMICAL AGE, vol. xxii, p. 101) are treated with halogens or agents supplying halogen in the presence of solvents or acids or acid-binding agents, *e.g.*, with sulphuryl chloride in nitrobenzene, chlorine in trichlorbenzene, bromine in nitrobenzene, or chlorine in nitrososulphuric acid. The corresponding azine is obtained and may be reduced with sodium bisulphite to the dihydro compound.

344,779. DYES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, October 29, 1928.

A naphthoylene-halogen-diaryl-imidazole is treated with an organic nitrogenous compound having at least one exchangeable hydrogen atom attached to the nitrogen atom in the presence of a high boiling solvent or diluent, an acid binding agent, and a copper catalyst. Alternatively, a naphthoylene-amino-diaryl-imidazole may be treated with an organic halogen compound. The process of Specification No. 237,294 (See THE CHEMICAL AGE, vol. xiii, p. 333) may be used to prepare the naphthoylene-halogen-diaryl-imidazoles, *i.e.*, the condensation of 1 : 4 : 5 : 8-naphthalene tetracarboxylic acid or its anhydride with halogen-*o*-diamines, or the naphthoylene-diaryl-imidazoles may be directly halogenated, or the naphthoylene-amino-diaryl-imidazoles may be subjected to Sandmeyer's reaction. In an example, 1 : 4 : 5 : 8-naphthoylene-4′ : 4″-dichlor-dibenzimidazole (the preparation of which is described) is condensed with α-amino-anthraquinone in nitrobenzene in the presence of potassium carbonate and cuprous chloride. Other examples are given.

345,146. DYESTUFF AND OTHER INTERMEDIATES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, May 8, 1929.

Polynuclear hydrocarbons such as naphthalene or anthracene are treated with at least two molecular proportions of formaldehyde in aqueous solution saturated with a hydrogen halide. More than one halogenmethyl group is thereby introduced. The products are intermediates for tanning agents and dyestuffs, and examples are given.

Specifications Accepted with Date of Application

349,007. Granulation of fertilizers. W. K. Hall, F. Heywood, and Imperial Chemical Industries, Ltd. December 19, 1929.

349,016. High-percentage acetic acid from the mixture of acetyl cellulose and acetic acid, Method of obtaining. K. Bratring and E. Roth-Schmidt. February 11, 1929.

349,017. Vinyl halides, Production of. J. P. Baxter and Imperial Chemical Industries, Ltd. February 12, 1930.

349,020. Phosphates, Method of treating—for the purpose of obtaining an artificial fertilizer. J. Kuusk. February 13, 1930.

349,022. Acetaldehyde from acetylene, Manufacture of. I.G. Farbenindustrie Akt.-Ges. February 15, 1929.

349,032. Saccharification of carbohydrates. H. Dreyfus. February 19, 1930.

349,033. Eliminating iron from inorganic materials. Vereinigte Stahlwerke Akt.-Ges. March 15, 1929. Addition to 341,060.

349,036. Fast vat dyestuffs, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) February 19, 1930.

349,037. Ortho-nitro-aryl-arsinic acids, Manufacture of. I.G. Farbenindustrie Akt.-Ges. February 19, 1929.

349,059. High molecular pyridine compounds, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) November 15, 1929.

349,060. Hydrogen or gas mixture containing the same, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) November 18, 1929.

349,061. Carbon disulphide, Process of recovering. Imperial Chemical Industries, Ltd., and J. McAulay. December 19, 1929.

349,067. Saturated hydrocarbons and gaseous mixtures rich in saturated hydrocarbons, Treatment of. Soc. d'Etudes Scientifiques et d'Entreprises Industrielles. January 14, 1929.

349,071. Lubricating oils and other valuable hydrocarbon products, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*). February 10, 1930.

349,080. 1:2-anthraquinone-thioglycollic carboxylic acid, Manufacture of conversion products of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) February 20, 1930.

349,088. Distillation of tar and like hydrocarbons. Barrett Co. December 18, 1929.

349,097. 1:1:2-trichlorethane, Production of. I.G. Farbenindustrie Akt.-Ges. March 11, 1929.

349,115 and 349,361. Vat dyestuffs, Manufacture of. I.G. Farbenindustrie Akt.-Ges. February 13, and July 16, 1929.

349,126. Wool dyestuffs, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) February 19, 1930.

349,178. Fertilizers, Manufacture of. I. Dubinbaum and L. R. Christie. March 11, 1930.

349,193. Synthesising oxygenated aliphatic compounds. Soc. Chimique de la Grande Paroisse Azote et Produits Chimiques. January 28, 1930.

349,224. Fertilizers from phosphate rock and the like, Production of. D. Tyrer and Imperial Chemical Industries, Ltd. April 8, 1930.

349,230. Treating gases with liquids, Method of and apparatus for. Soc. Anon. Industria. Ammonica and F. Lopez. April 9, 1930.

349,233. Purifying gases, Method of. W. H. Owen. April 10, 1930.

349,238. Sulphuric acid from waste gases containing hydrogen sulphide and carbonic acid, Production of. W. W. Groves. (*Dr. C. Otto and Co., Ges.*) April 14, 1930.

349,257. Therapeutic substances, Manufacture of. Schering-Kahlbaum Akt.-Ges. June 7, 1929.

349,263. Vinyl chloride, Manufacture of. I.G. Farbenindustrie Akt.-Ges. May 1, 1929.

349,273. Latex compositions. Manufacture of. Goodyear Tire and Rubber Co. July 27, 1929.

349,287. Gas mixtures rich in sulphur dioxide, Recovery of. M. Schroeder. May 15, 1929.

349,301. Double salts, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) May 24, 1930.

349,304. Metalliferous dyestuffs, Manufacture of. Soc. of Chemical Industrie in Basle. May 25, 1929.

349,313. Smelting material containing tin oxide. Berzelius Metallhutten Ges., M. G. Freise, and H. Maschmeyer. May 29, 1930.

349,322. Cellulose esters, Manufacture of. Soc. of Chemical Industry in Basle. June 1, 1929.

349,325. Dyestuffs of the anthraquinone series, Manufacture of. I.G. Farbenindustrie Akt.-Ges. June 7, 1929.

349,326. Steel alloys, Manufacture of. A.E.G.T. Von Vegesack and Uddeholms Aktiebolag. June 6, 1930. Addition to 268,616.

349,339. Stable diazo preparations, Manufacture of. Soc. of Chemical Industry in Basle. June 17, 1929.

349,342. Conversion of heavy petroleum oils into lubricating oils by treatment with hydrogen at high pressures and temperatures. Standard Oil Development Co. July 18, 1929.

349,367. Desulphurization and bleaching of viscose artificial silk. W. H. Francke. July 22, 1929.

349,371 and 349,391. Rubber and the like, Manufacture of. Imperial Chemical Industries, Ltd. July 25 and August 30, 1929.

349,376. Mixed oil gas and water gas, Manufacture of. Humphreys and Glasgow, Ltd., September 3, 1929.

349,409. Potassium monophosphate, Production of. Kali-Forschungs-Anstalt Ges. October 25, 1929. Addition to 327,885.

Applications for Patents

[In the case of applications for patents under the International Convention, the priority date (that is, the original application date abroad which the applicant desires shall be accorded to the patent) is given in brackets, with the name of the country of origin. Specifications of such applications are open to inspection at the Patent Office on the anniversary of the date given in brackets, whether or not they have been accepted.]

Anderson, I. B., Imperial Chemical Industries, Ltd., Thomson, R. F., and Thornley, S. Production and use of anthracene derivatives. 15,428. May 26.

Asahina, Y., Ishidate, M., Kihara, G., and Tamura, K. Manufacture of para-oxocamphor, etc. 15,697. May 28. (Japan, August 7, 1930.)

Baldwin, A. W., Hailwood, A. J., Imperial Chemical Industries, Ltd. Manufacture of wetting, etc., agents. 16,008. June 1.

—— Hailwood, A. J., Imperial Chemical Industries, Ltd., and Ward, D. Quarternary ammonium salts. 16,009. 16,010. June 1.

Bampfylde, J. W., British and Dominions Ferralloy, Ltd., and Sykes, C. Manufacture of alloys of iron and aluminium. 16,609. June 6.

Binnie, R. T., and Miller, W. Apparatus for extracting liquid from solids, etc., by pressure. 16,200. June 4.

Bloomfield, A. L. Conduct of crotonaldehyde condensation. 16,353. June 4.

British Celanese, Ltd., and Ellis, G. H. Manufacture, etc., of dyestuffs. 16,569. June 6.

Brookes, N. E., and Dewey and Almy Chemical Co. Making rubber and fibre articles. 15,875. May 30.

Bunbury, H. M., Imperial Chemical Industries, Ltd., and Palmer, K. W. Preservation of oxidisable organic compounds. 16,284. June 4.
Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of azo-dyestuffs. 15,418. May 26.
—— Textile printing. 15,696. May 28.
—— Manufacture of azo dyestuffs. 15,987. June 1.
—— Manufacture of wetting agents. 16,169. June 4.
—— Manufacture of amides of higher fatty acids. 16,170. June 4.
—— Manufacture of anthraquinone derivatives. 16,577. 16,578. June 6.
Castner, J. B., E. I. Du Pont de Nemours and Co., and Powers, R. W. Production of iron oxide pigments. 16,511. June 5.
Chemical Works vorm. Sandoz, and Ellis, G. B. Preparation of anthraquinone dyestuffs. 16,516. June 5.
Coles, S. O. Cowper-. Aluminium recovery. 16,023. June 2.
Coley, H. E. Reduction of ores, oxides, etc. 16,351. June 4.
—— Reduction of ores, etc. 16,531. June 5.
County Chemical Co., Ltd. Collapsable tubes, etc. 15,317 May 26.
Cox, K., and Waters, A. E. Distillation of tar, etc. 16,494. June 5.
Dandridge, A. G., and Imperial Chemical Industries, Ltd. Dry preparation of dyestuffs. 16,509. June 5.
Daudt, H. W., and E. I. du Pont de Nemours and Co. Manufacture of benzoic acid. 16,289. June 4.
Distillers Co., Ltd., Joshua, W. P., and Stanley, H. M. Manufacture of ethyl alcohol. 15,739. May 29.
Dorough, G. L., and E. I. du Pont de Nemours and Co. Manufacture of styrene. 16,510. June 5.
Dunn, J. S. Purification of sulphur. 15,380. May 26.
Dupont Ammonia Corporation. Recovery of sulphuric acid from acid sludge of oil refiners. 15,746. May 29. (United States, May 31, 1930.)
Du Pont de Nemours and Co., E.I., and Triggs, W. W. Acetylene reactions. 15,498. May 27.
—— Nonbenzenoid acetylene polymers. 15,499. May 27.
—— Reduction compounds of non-benzenoid acetylene polymers, 15,912. May 30.
—— Synthetic rubber. 15,913. May 30.
—— Forming compounds from acetylene. 15,914. May 30.
—— Manufacture of halogenated unsaturated non-benzenoid acetylene polymers. 16,256. June 4.
Du Pont de Nemours and Co., E. I. Manufacture of 2-amino- and 2-substituted amino-arylenethiazoles. 15,510. May 27. (United States, May 27, 1930.)
—— Manufacture of lakes. 15,511. May 27. (United States, May 27, 1930.)
—— Manufacture of polyhydric alcohols. 16,290. June 4.
—— Manufacture of vinyl esters. 16,081. June 2. (United States, June 3, 1930.)
Dutt, E. E. Electrodeposition of aluminium, etc. 16,612. June 6.
—— Electrodeposition of magnesium, etc. 16,613. June 6.
—— Manufacture of aluminium phosphate. 16,614. June 6.
Dymock, J. B. Manufacture of ethyl alcohol. 15,739. May 29.
Fairweather, D. A. W., Thomson, R. F., and Imperial Chemical Industries, Ltd. Production of anthracene derivatives. 16,013. June 1.
Gill, H. A., and Saline Ludwigshalle. Process for obtaining pure aluminium-alkali double fluorides. 15,546. May 27.
Goldstein, R. F., and Imperial Chemical Industries, Ltd. Production of intermediate products and azo dyestuffs therefrom. 15,748. May 29.
Goldstein, R. F. Manufacture of halogenated alkoxyanilines. 16,285. June 4.
Greiner, H., and Koenigs, E. Manufacture of pyridine derivatives. 15,417. May 26.
Groves, W. W., and I.G. Farbenindustrie Akt.-Ges. Manufacture of emulsions. 15,540. May 27.
Hannay, R. J. Colouring materials. 15,718. May 29.
Heaton, W. B., and Melvill, F. L. Cracking hydro-carbon material. 15,800. May 29.
Héreng, A. J. A. Low-temperature distillation of solid fuels. 15,850. May 30. (France, May 30, 1930.)
Hill, L. M., and Imperial Chemical Industries, Ltd. Production of sodium bicarbonate and ammonium sulphate. 15,565. May 27.
Hirsch, N. V. Chemical concentration of phosphate. 16,099. June 2.
Horsley, G. F., Woolcock, J. W., and Imperial Chemical Industries, Ltd. Production of organic nitrogenous bases, etc. 16,082. June 2.
I.G. Farbenindustrie Akt.-Ges., and Johnson, J. Y. Apparatus for improvement of waxes, etc. 15,383. May 26.
—— Recovery of molybdenum, tungsten, etc., from ores. 15,384. May 26.
—— Refining oils and fats. 15,385. May 26.
—— Carrying out catalytic reactions. 15,386. May 26.
—— Manufacture of polymerisation products of vinyl ethers. 15,885. May 30.
—— Manufacture of motor fuels. 16,475. June 5.
—— Manufacture of tungsten carbonyl. 16,476. June 5.
—— Manufacture of condensation products. 16,477. June 5.
—— Treatment of textile materials. 16,478. June 5.
—— Production of hydrogen. 16,603. June 6.
—— Manufacture of compound glass. 16,604. June 6.
I.G. Farbenindustrie Akt.-Ges. Manufacture of secondary disazo-dyestuffs. 15,656. May 28. (Germany, May 28, 1930.)
—— Manufacture of artificial sponges. 15,761. May 29. (Germany, June 5, 1930.)
—— Production of naphthenates of earth metals. 15,882. May 30. (Germany, June 2, 1930.)
—— Manufacture of 1-phenyl-2-amin-oalcohols-1 containing hydroxyl in phenyl residue. 15,966. June 1. (Germany, May 31, 1930.)
—— Manufacture of mixed esters, etc., of polymeric carbohydrates. 16,084. June 2. (Germany, June 4, 1930.)
—— Manufacture of aqueous solutions of silk fibroin. 16,085. June 2. (Germany, June 10, 1930.)
—— Manufacture of vat dyestuffs of the anthraquinone series. 16,103. June 2. (Germany, June 3, 1930.)
—— Apparatus for charging, discharging, and turning material in rotary-hearth furnaces. 16,161. June 4. (Germany, August 29, 1930.)
—— Manufacture of vat dyestuffs of the anthraquinone series. 16,171. June 4. (Germany, June 4, 1930.)
—— Manufacture of safety glass. 16,312. June 4. (Germany, June 25, 1930.)
—— Manufacture of wool dyestuffs. 16,313. June 4. (Germany, July 9, 1930.)
Imperial Chemical Industries, Ltd. Manufacture of esters. 15,379. May 26.
—— Purification of sulphur. 15,380. May 26.
—— Fibrous materials, etc. 15,381. May 26.
—— Artificial mordanting-substances. 15,382. May 26.
—— Application of vat colours. 16,012. June 1.
—— Anthraquinone derivatives. 16,282. June 4.
—— Manufacture of horn-like material from casein. 16,283. June 4.
—— Dyeing process. 16,286. June 4.
—— Refrigerating with solid carbon dioxide. 16,287. June 4.
—— Production of nitrogen and hydrogen. 16,288. June 4.
—— Production of coking coals. 16,508. June 5.
—— and Sexton, W. A. Manufacture of halogenated alkoxyanilines. 16,285. June 4.
Imperial Chemical Industries, Ltd., Linch, F. W., and Stocks, H. H. Manufacture of colour lakes. 16,011. June 1.
Imperial Chemical Industries, Ltd., and Tyrer, D. Production of sulphur from sulphide ores. 15,747. May 29.
Kali-Chemie Akt.-Ges. Production of disinfectants. 16,276. June 4. (Germany, June 3, 1930.)
Larcher, A. W. Manufacture of polyhydric alcohols. 16,290. June 4.
Mond, A. L., and Universal Oil Products Co. Cracking hydro-carbon oil. 16,125. June 2.
Newport Chemical Corporation. Process for preparing beta-amino-anthraquinone. 15,970. June 1. (United States, June 13, 1930.)
Nippon Chissohiryo Kabushiki-Kaisha. Synthetic manufacture of acetic acid. 15,773. May 29. (Japan, September 10, 1930.)
Richards, W. W. Synthetic resins. 16,187. June 4.
Rubber Service Laboratories Co. Process of manufacturing thiazole derivatives. 16,126. June 2. (United States, June 21, 1930.)
Saline Ludwigshalle. Process for obtaining pure aluminium-alkali double fluorides. 15,546. May 27.
Schaarschmidt, A. Manufacture of condensation products from hydrocarbons, etc. 15,894. May 30. (Germany, May 31, 1930.)
Soc. of Chemical Industry in Basle. Manufacture of oxyethylamino-derivatives of anthraquinone series. 15,541. May 27. (Switzerland, June 4, 1930.)
—— Manufacture of sulphuric acid esters. 15,657. May 28. (Switzerland, May 28, 1930.)
Soteria Chemische Fabrik Akt.-Ges. Manufacture of salts of idodomethane sulphonic acid. 15,772. May 29. (Austria, June 12, 1930.)
Strange, E. H. Manufacture of ammonia, etc. 15,335. May 26.
Tatum, W. W., and Thomson, R. F. Anthraquinone derivatives. 16,282. June 4.
Tomkinson, E. M., Tomkinson, Ltd., F. W. Articles made of phenol formaldehyde condensation products. 16,217. June 4.
Townsend, L. W. E. Conduct of crotonaldehyde condensation. 16,353. June 4.
Triggs, W. W., and Von Winkler Laboratories, Inc. Making silver salt of amino sulphonated castor oil. 15,909. May 30.
United Water Softeners, Ltd. Treatment of liquids by base exchange. 16,406. June 4. (Germany, June 3, 1930.)
Wilson, J. S., and Wylam, B. Dry preparation of dyestuffs. 16,509. June 5.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£18 15s. per ton d/d address U.K. in casks.
ACID CHROMIC.—11d. per lb., less 2½% d/d U.K.
ACID HYDROCHLORIC.—Spot, 3s. 9d. to 6s. carboy d/d, according to purity, strength and locality.
ACID NITRIC, 80° Tw.—Spot, £20 to £25 per ton makers' works, according to district and quality.
ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
AMMONIA (ANHYDROUS).—Spot, 10d. per lb., d/d in cylinders.
AMMONIUM BICHROMATE.—8½d. per lb. d/d U.K., or 8d. c.i.f. export
BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.
BLEACHING POWDER, 35/37%.—Spot, £7 19s. per ton d/d station in casks, special terms for contracts.
BORAX, COMMERCIAL.—Crystals, £13 10s. per ton; granulated, £12 10s. per ton; powder, £14 per ton. (Packed in 1 cwt. bags. carriage paid any station in Great Britain. Prices quoted are for one ton lots and upwards.)
CALCIUM CHLORIDE (SOLID), 70/75%.—Spot, £4 15s. to £5 5s. per ton d/d station in drums.
CHROMIUM OXIDE.—9d. to 9½d. per lb. according to quantity d/d U.K.
CHROMETAN.—Crystals, 3½d. per lb. Liquor, £18 12s. 6d. per ton d/d U.K.
COPPER SULPHATE.—£25 to £25 10s. per ton.
METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 11d. to 2s. 4d. per gall.; pyridinised industrial, 2s. 1d. to 2s. 6d. per gall.; mineralised, 3s. to 3s. 4d. per gall. 64 O.P., 1d. extra in all cases. Prices according to quantity.
NICKEL SULPHATE.—£38 per ton d/d.
NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
POTASH CAUSTIC.—£30 to £33 per ton.
POTASSIUM BICHROMATE CRYSTALS AND GRANULAR.—4½d. per lb. nett d/d U.K., discount according to quantity: ground ½d. per lb. extra.
POTASSIUM CHLORATE.—3¾d. per lb. ex-wharf, London, in cwt. kegs.
POTASSIUM CHROMATE.—8½d. per lb. d/d U.K., or 8d. c.i.f. export.
SALAMMONIAC.—Firsts lump, spot, £40 17s. 6d. per ton d/d address in barrels. Chloride of ammonia, £37 to £45 per ton, carr. paid.
SALT CAKE, UNGROUND.—Spot, £3 10s. per ton d/d station in bulk.
SODA ASH, 58%.—Spot, £6 per ton, f.o.r. in bags, special terms for contracts.
SODA CAUSTIC, SOLID, 76/77° E.—Spot, £14 10s. per ton, d/d station.
SODA CRYSTALS.—Spot, £5 to £5 5s. per ton, d/d station or ex depot in 2-cwt. bags.
SODIUM ACETATE 97/98%.—£21 per ton.
SODIUM BICARBONATE, REFINED.—Spot, £10 10s. per ton d/d station in bags.
SODIUM BICHROMATE CRYSTALS (CAKE AND POWDER)—3½d. per lb. nett d/d U.K., discount according to quantity. Anhydrous ¾d. per lb. extra.
SODIUM BISULPHITE POWDER, 60/62%.—£16 10s. per ton delivered 1-cwt. iron drums for home trade.
SODIUM CHLORATE.—2¾d. per lb.
SODIUM CHROMATE.—3¾d. per lb. d/d U.K., or 3½d. c.i.f. export.
SODIUM NITRITE.—Spot, £19 per ton, d/d station in drums.
SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.
SODIUM SILICATE, 140° Tw.—Spot, £8 5s. per ton, d/d station returnable drums.
SODIUM SULPHATE (GLAUBER SALTS).—Spot, £4 2s. 6d. per ton, d/d.
SODIUM SULPHIDE SOLID, 60/62%.—Spot, £10 5s. per ton, d/d in free drums. Crystals—Spot, £8 5s. per ton, d/d in free casks.
SODIUM SULPHITE, PEA CRYSTALS.—Spot, £13 10s. per ton, d/d station in kegs. Commercial—Spot, £9 per ton, d/d station in bags.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—5d. to 6½d. per lb. Crude 60's 1s. to 1s. 1d. per gall. August/December.
ACID CRESYLIC 99/100.—1s. 9d. to 1s. 10d. per gall. B.P., 3s. 6d. per gall. 97/99.—Refined, 2s. 2d. to 2s. 3d. per gall. Pale, 98%, 1s. 8d. to 1s. 9d. Dark, 1s. 4d. to 1s. 4½d.
ANTHRACENE OIL, STRAINED (GREEN OIL).—4½d. to 4¾d. per gall.
BENZOLE.—Prices at works: Crude, 6½d. to 7½d. per gall.; Standard Motor, 1s. 1d. to 1s. 2d. per gall. 90%.—1s. 2d. to 1s. 3d. per gall. Pure, 1s. 5d. to 1s 6d. per gall.
TOLUOLE.—90%, 1s. 8d. to 1s. 9d. per gall. Pure, 1s. 10d. to 1s. 11d. per gall.
XYLOL.—1s. 8d. to 1s. 9d. per gall. Pure, 1s. 10d to 1s. 11d. per gall.
CREOSOTE.—Standard specification, for export, 5dd. to 5¼d. net per gall. f.o.b.; for Home, 4d. per gall. d/d.
NAPHTHA.—Solvent, 90/160, 1s. 3d. per gall. Solvent, 95/160, 1s. 4d. to 1s. 5d. per gall. Solvent, 90/190, 1s. to 1s. 2d. per gall.
NAPHTHALENE.—Purified Crystals, £10 per ton.
PITCH.—Medium soft, 45s. to 47s. 6d. per ton, in bulk at makers' works.
PYRIDINE.—90/140, 3s. to 3s. 3d. per gall. 90/160, 3s. 3d. to 3s. 6d. per gall. 90/180, 1s. 9d. to 2s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:—

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
ACID ANTHRANILIC.—6s. per lb. 100%.
ACID GAMMA.—Spot, 3s. 3d. per lb. 100% d/d buyer's works.
ACID H.—Spot, 2s. 3d. per lb. 100% d/d buyer's works.
ACID NAPHTHIONIC.—1s. 2d. per lb. 100% d/d buyer's works.
ACID NEVILLE AND WINTHER.—Spot, 2s. 6d. per lb. 100% d/d buyer's works.
ACID SULPHANILIC.—Spot, 8½d. per lb. 100% d/d buyer's works.
ANILINE OIL.—Spot, 8d. per lb., drums extra, d/d buyer's works.
ANILINE SALTS.—Spot, 8d. per lb. d/d buyer's works, casks free.
BENZALDEHYDE.—Spot, 1s. 6d. per lb., packages extra, d/d buyer's works.
BENZIDINE BASE.—Spot, 2s. 3d. per lb. 100% d/d buyer's works.
BENZOIC ACID.—Spot, 1s. 8½d. per lb. d/d buyer's works.
o-CRESOL 30/31° C.—£2 6s. 5d. per cwt., in 1-ton lots.
m-CRESOL 98/100%.—2s. 9d. per lb., in ton lots.
p-CRESOL 34·5° C.—1s. 9d. per lb., in ton lots.
DICHLORANILINE.—2s. 5d. per lb.
DIMETHYLANILINE.—Spot, 1s. 6d. per lb., packages extra, d/d buyer's works.
DINITROBENZENE.—7½d. per lb.
DINITROCHLORBENZENE.—£74 per ton d/d.
DINITROTOLUENE.—48/50° C., 7d. per lb.; 66/68° C., 7¾d. per lb.
DIPHENYLAMINE.—Spot, 1s. 8d. per lb. d/d buyer's works.
a-NAPHTHOL.—Spot, 1s. 9d. per lb. d/d buyer's works.
B-NAPHTHOL.—Spot, £65 per ton in 1 ton lots, d/d buyer's works.
a-NAPHTHYLAMINE.—Spot, 10½d. per lb. d/d buyer's works.
B-NAPHTHYLAMINE.—Spot, 2s. 9d. per lb. d/d buyer's works.
o-NITRANILINE.—5s. 11d. per lb.
m-NITRANILINE.—Spot, 2s. 6d. per lb. d/d buyer's works.
p-NITRANILINE.—Spot, 1s. 8d. per lb. d/d buyer's works.
NITROBENZENE.—Spot, 6½d. per lb., 5-cwt. lots, drums extra, d/d buyer's works.
NITRONAPHTHALENE.—8½d. per lb.
R. SALT.—Spot, 2s. per lb. 100% d/d buyer's works.
SODIUM NAPHTHIONATE.—Spot, 1s. 6d. per lb. 100% d/d buyer's works.
o-TOLUIDINE.—Spot, 8d. per lb., drums extra, d/d buyer's works.
p-TOLUIDINE.—Spot, 1s. 6d. per lb. d/d buyer's works.
m-XYLIDINE ACETATE.—3s. 3d. per lb., 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £7 5s. to £7 10s. per ton. Grey, £13 per ton. Liquor, 9d. per gall.
ACETONE.—£63 to £65 per ton.
CHARCOAL.—£6 to £8 10s. per ton, according to grade and locality.
IRON LIQUOR.—24°/30° Tw., 10d. to 1s. 2d. per gall.
RED LIQUOR.—16° Tw., 8½d. to 10d. per gall.
WOOD CREOSOTE.—1s. 9d. per gall., unrefined.
WOOD NAPHTHA, MISCIBLE.—2s. 9d. to 2s. 11s. per gall., according to quantity. Solvent, 3s. 9d. per gall.
WOOD TAR.—£4 to £5 per ton.
BROWN SUGAR OF LEAD.—£32 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 1d. per lb according to quality; Crimson, 1s. 3d. to 1s. 5d. per lb., according to quality.
ARSENIC SULPHIDE, YELLOW.—1s. 5d. to 1s. 7d. per lb.
BARYTES.—£6 to £7 10s. per ton, according to quality.
CADMIUM SULPHIDE.—4s. 6d. to 5s. per lb.
CARBON BISULPHIDE.—£26 to £28 per ton, according to quantity; drums extra.
CARBON BLACK.—3d. to 4d. per lb., ex wharf.
CARBON TETRACHLORIDE.—£40 to £50 per ton, according to quantity: drums extra.
CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.
DIPHENYLGUANIDINE.—2s. 6d. per lb.
INDIARUBBER SUBSTITUTES, WHITE.—4⅝d. to 5⅛d. per lb.; Dark, 4⅛d. to 4⅞d. per lb.
LAMP BLACK.—£28 per ton, barrels free.
LITHOPONE, 30%.—£18 to £20 per ton.
SULPHUR.—£9 10s. to £13 per ton, according to quality.
SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.
SULPHUR PRECIP. B.P.—£55 to £60 per ton, according to quantity.
VERMILION, PALE OR DEEP.—6s. 4d. to 6s. 10d. per lb.
ZINC SULPHIDE.—8d. to 11d. per lb.

Pharmaceutical and Photographic Chemicals

ACETANILIDE.—1s. 4½d. to 1s. 6d. per lb.

ACID, ACETIC, PURE, 80%.—£37 5s. per ton d/d address U.K. in casks.

ACID, ACETYL SALICYLIC.—2s. 7d. to 2s. 9d. per lb., according to quantity.

ACID, BENZOIC B.P.—1s. 10d. per lb., for synthetic product. Solely ex Gum, 1s. 3d. to 1s. 6d. per oz.; 50-oz. lots, 1s. 3d. per oz.

ACID, BORIC B.P.—Crystal, £31 per ton; powder, £32 per ton; For one-ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—11½d. per lb., less 5%.

ACID, GALLIC.—2s. 11d. per lb. for pure crystal, in cwt. lots.

ACID, MOLYBDIC.—5s. 3d. per lb. in ½-cwt. lots. Packages extra. Special prices for quantities and contracts.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. for 28-lb. lots.

ACID, SALICYLIC, B.P. PULV.—1s. 5d. to 1s. 8d. per lb. Technical.—1s. to 1s. 2d. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—11½d. per lb., less 5%.

AMIDOL.—7s. 6d. to 11s. 3d. per lb., according to quantity.

AMMONIUM BENZOATE.—3s. 6d. per lb.

AMMONIUM CARBONATE B.P.—£36 per ton. Powder, £39 per ton in 5-cwt. casks. Resublimated, 1s. per lb.

AMMONIUM MOLYBDATE.—4s. 9d. per lb. in ½-cwt. lots. Packages extra. Special prices for quantities and contracts.

ARGENT. NITRAS, CRYSTALS.—1s. 1d. per oz.

ATROPHINE SULPHATE.—7s. to 7s. 6d. per oz., according to quantity.

BARBITONE.—5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—2s. 10d. per lb.

BISMUTH CARBONATE.—7s. 3d. per lb.

BISMUTH CITRATE.—8s. 4d. per lb.

BISMUTH SALICYLATE.—7s. 7d. per lb.

BISMUTH SUBNITRATE.—6s. 6d. per lb.

BISMUTH NITRATE.—Cryst. 5s. 4d. per lb.

BISMUTH OXIDE.—10s. 4d. per lb.

BISMUTH SUBCHLORIDE.—10s. per lb.

BISMUTH SUBGALLATE.—7s. 6d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.

BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W. Qts. 11d. per lb. Liquor Bismuth B.P., in W. Qts., 1s. 2d. per lb.; 6 W. Qts., 11½d. per lb.; 12 W. Qts., 10d. per lb.; 36 W. Qts., 9½d. per lb.

BORAX B.P.—Crystal, £21 10s. per ton; powder, £22 per ton; for one-ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.

BROMIDES.—Ammonium, 1s. 9d. per lb.; potassium, 1s. 4½d. per lb.; granular, 1s. 5d. per lb.; sodium, 1s. 7d. per lb. Prices for 1-cwt. lots.

CAFFEIN, PURE.—6s. 6d. per lb.

CAFFEIN CITRAS.—5s. per lb.

CALCIUM LACTATE.—B.P., 1s. 1½d. to 1s. 3d. per lb., according to quantity.

CAMPHOR.—Refined flowers, 2s. 10d. to 3s. per lb., according to quantity; also special contract prices.

CHLORAL HYDRATE.—2s. 11½d. to 3s. 1½d. per lb.

CHLOROFORM.—2s. 3d. to 2s. 6d. per lb., according to quantity.

ETHERS.—S.G. ·730—1s. 1d. to 1s. 2d. per lb., according to quantity; other gravities at proportionate prices.

FORMALDEHYDE, 40%.—30s. per cwt., in barrels, ex wharf.

GLUCOSE, MEDICINAL.—1s. 6d. to 2s. per lb. for large quantities.

HEXAMINE.—1s. 10d. to 2s. per lb., according to quantity.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 3s. per gall.

HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 2s. 11d. to 3s. 4d. per lb.; potassium, 3s. 2d. to 3s. 7d. per lb.; sodium, 3s. 1d. to 3s. 6d. per lb.; for 28-lb. lots.

IRON AMMONIUM CITRATE.—B.P., 1s. 9d. per lb., for 28-lb. lots. Green, 2s. 6d. per lb., list price. U.S.P., 2s. 7d. per lb. list price.

IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.

IRON QUININE CITRATE.—B.P., 8¼d. to 8¾d. per oz., according to quantity.

MAGNESIUM CARBONATE.—Light B.P., 36s. per cwt.

MAGNESIUM OXIDE.—Light Commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.

MENTHOL.—A.B.R. recrystallised B.P., 14s. 6d. per lb. net; Synthetic, 8s. 6d. to 12s. per lb.; Synthetic detached crystals, 8s. 6d. to 10s. per lb., according to quantity; Liquid (95%), 9s. per lb.

MERCURIALS B.P.—Up to 1-cwt. lots, Red Oxide, crystals, 8s. 4d. to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.; Corrosive Sublimate, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide, 7s. 8d. to 7s. 9d. per lb.; Persulph, B.P.C., 6s. 11d. to 7s. per lb.; Sulph. nig., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 3d. to 1s. 5d. per lb.

PARAFORMALDEHYDE.—1s. 6d. per lb.

PARALDEHYDE.—1s. 1d. per lb.

PHENACETIN.—3s. 9d. to 4s. 1d. per lb.

PHENOLPHTHALEIN.—5s. to 5s. 2½d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—82s. per cwt., less 2½ per cent.

POTASSIUM CITRATE.—B.P., 1s. 7d. per lb. for 28-lb. lots.

POTASSIUM FERRICYANIDE.—1s. 7½d. per lb., in 125-lb. kegs.

POTASSIUM IODIDE.—16s. 8d. to 17s. 9d. per lb., as to quantity.

POTASSIUM METABISULPHITE.—50s. per cwt. d/dLondon, kegs free.

POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.

QUININE SULPHATE.—1s. 8d. per oz. for 1,000-oz. lots.

SACCHARIN.—43s. 6d. per lb.

SALICIN.—16s. 6d. to 17s. 6d. per lb., according to quantity.

SANTONIN.—£50 per kilo for 5-kilo lots.

SILVER NITRATE.—10d. per oz. for 500-oz. lots, sticks, 2d. per oz. extra.

SODIUM BARBITONUM.—8s. 6d. to 9s. per lb. for 1-cwt. lots.

SODIUM BENZOATE B.P.—1s. 6½d. to 1s. 7½d. per lb.

SODIUM CITRATE.—B.P.C. 1911, 1s. 4d. per lb. B.P.C. 1923, and U.S.P., 1s. 8d. per lb. for 28-lb. lots.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—75s. per cwt net, ton lots, d/s of 5 cwt. Crystals, 2s. 6d. per cwt. extra.

SODIUM SALICYLATE.—Powder, 1s. 10d. to 2s. 2d. per lb. Crystal, 1s. 11d. to 2s. 3d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS.—£26 to £28 per ton, according to quantity. Delivered U.K.

STRYCHNINE, ALKALOID CRYSTAL, 2s. per oz.; hydrochloride, 1s. 9½d. per oz.; nitrate, 1s. 8d. per oz.; sulphate, 1s. 9d. per oz., for 1,000-oz. quantities.

TARTAR EMETIC, B.P.—Crystal or powder, 1s. 9d. to 2s. per lb.

THYMOL.—Puriss, 6s. 1½d. to 7s. per lb., according to quantity. Natural, 12s. per lb.

ZINC STEARATE.—1s. 4d. to 1s. 6d. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.

AUBEPINE (EX ANETHOL).—9s. per lb.

AMYL ACETATE.—2s. 3d. per lb.

AMYL BUTYRATE.—4s. 9d. per lb.

AMYL CINNAMIC ALDEHYDE.—9s. per lb.

AMYL SALICYLATE.—2s. 6d. per lb.

ANETHOL (M.P. 21/22° C.).—5s. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—1s. 9d. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—1s. 9d. per lb.

BENZYL BENZOATE.—2s. 2d. per lb.

CINNAMIC ALDEHYDE NATURAL.—11s. 9d. per lb.

COUMARIN.—12s. per lb.

CITRONELLOL.—6s. 6d. per lb.

CITRAL.—6s. 6d. per lb.

ETHYL CINNAMATE.—6s. 9d. per lb.

ETHYL PHTHALATE.—2s. 6d. per lb.

EUGENOL.—8s. 6d. per lb.

GERANIOL.—6s. to 10s. per lb.

HELIOTROPINE.—5s. 6d. per lb.

ISO EUGENOL.—10s. 6d. per lb.

LINALYL ACETATE, EX BOIS DE ROSE.—7s. 6d. per lb. Ex Shui Oil, 7s. 6d. per lb.

METHYL ANTHRANILATE.—6s. 3d. per lb.

METHYL BENZOATE.—4s. 3d. per lb.

MUSK XYLOL.—6s. 6d. per lb.

PHENYL ETHYL ACETATE.—10s. per lb.

PHENYL ETHYL ALCOHOL.—8s. 3d. per lb.

RHODINOL.—40s. per lb.

SAFROL—1s. 6d. per lb.

VANILLIN, EX CLOVE OIL.—14s. 6d. to 16s. 6d. per lb. Ex Guaiacol.—13s. to 15s. per lb.

Essential Oils

ANISE OIL.—2s. 6d. per lb.

BERGAMOT OIL.—8s. 3d. per lb.

BOURBON GERANIUM OIL.—17s. 6d. per lb.

CAMPHOR OIL.—White, 2s. per lb.; Brown, 1s. 6d. per lb.

CANANGA.—Java, 8s. per lb.

CINNAMON OIL LEAF.—4s. 6d. per oz.

CITRONELLA OIL.—Java, 2s. 2d. per lb., c.i.f. Pure Ceylon, 2s. per lb.

CLOVE OIL, 90/92%.—6s. 6d. per lb.

EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%—1s. 7d. per lb.

LAVENDER OIL.—Mont Blanc, 38/40%, 9s. per lb.

LEMON OIL.—4s. per lb.

LEMONGRASS OIL.—3s. 1½d. per lb.

OTTO OF ROSE.—Anatolian, 45s. per oz.; Bulgarian, 65s. per oz.

PALMA ROSA.—9s. 6d. per lb.

PEPPERMINT OIL.—Wayne County, 8s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, June 11, 1931.

PRICES remain generally unchanged with a fair amount of inquiries.

General Chemicals

ACETONE is firm and unchanged at £60/63 per ton according to quantity, with a satisfactory demand.

ACID ACETIC is in continuous request, with technical 80% at £36 5s. to £38 5s. per ton, and pure 80% at £37 5s. to £39 5s. per ton according to quantity.

ACID CITRIC is easy at about 1s. ½d. per lb., less 5%.

ACID FORMIC is unchanged at £38 per ton.

ACID LACTIC 50% by weight, pale technical quality, £39 per ton.

ACID OXALIC firm at £34 per ton, carriage paid, with a good inquiry.

ACID TARTARIC about 11d. to 11¼d. per lb., less 5%. The improved demand continues.

ALUMINA SULPHATE firm at £7 15s. to £8 5s. per ton for the 17/18% iron free quality, and in good steady request.

ARSENIC.—Cornish—remains scarce and firm at £19 to £19 10s. per ton.

CREAM OF TARTAR.—80s. to 81s. per cwt., ex warehouse London.

COPPER SULPHATE is steady at about £21 to £21 10s. per ton, less 5%, free on rails London.

FORMALDEHYDE, 40% volume, £29 per ton, and in steady request.

LEAD ACETATE is a little easier at £31 15s. per ton for white with brown £1 per ton less.

LITHOPONE.—Unchanged at £18 to £22 per ton, according to quantity and grade.

POTASSIUM BICHROMATE.—Firm at 4¼d. per lb., with discounts for contracts.

POTASSIUM CHLORATE is very firm at £28 to £32 per ton according to quantity.

PERMANGANATE OF POTASH is firm at 5¼d. to 5½d. per lb., ex warehouse for B.P. needle crystals.

SODIUM BICHROMATE is firm at 3½d. per lb., with discounts for contracts and in good request.

SODIUM HYPOSULPHITE PHOTOGRAPHIC CRYSTALS.—In good demand at £14 5s. per ton. Commercial quality about £8 10s. per ton.

SODIUM PRUSSIATE is firm at 4¾d. to 5¼d. per lb.

TARTAR EMETIC.—10½d. per lb. with an improved demand.

ZINC SULPHATE.—Steady at £10 10s. per ton.

Coal Tar Products

The market for coal tar products remains dull, although prices are maintaining their level.

MOTOR BENZOL remains at about 1s. 4½d. to 1s. 5½d. per gallon, f.o.r.

SOLVENT NAPHTHA is quoted at about 1s. 1½d. to 1s. 2d. per gallon, f.o.r.

HEAVY NAPHTHA is worth about 11d. to 1s. ½d. per gallon, f.o.r.

CREOSOTE OIL is unchanged at about 3d. to 3½d. per gallon, f.o.r. in the North, and at 4d. to 4½d. per gallon in London.

CRESYLIC ACID is obtainable at about 1s. 8d. per gallon for the 98/100% quality, and at about 1s. 6d. per gallon for the dark quality 95/97%.

NAPHTHALENES are quoted at about £3 10s. to £3 15s. per ton for the firelighter quality, at about £4 to £4 5s. per ton for the 74/76 quality, and at £5 per ton for the 76/78 quality.

PITCH is worth about 37s. 6d. to 42s. 6d. per ton, f.o.b. East Coast Port, for forward delivery.

THE following additional prices have been reported :—

Carbolic Acid.—There is no change in prices—5-ton lots are still quoted at 5½d. with druggists' quantities at 6¼d. per lb. in bulk packing.

Sodium Salicylate.—Unchanged at 1s. 10½d. for powder and 1s. 11½d. for crystal, in 1-ton lots.

Salicylic Acid.—Crystal and powder is quoted at 1s. 5d. per lb. in ton quantities ; 5-cwt. lots at 1s. 6d. ; 1-cwt. lots at 1s. 6½d.

Vanillin.—Clove oil vanillin is quoted at 14s. 6d. to 16s. 6d., with guaiacol at 1s. 6d. per lb. less.

Nitrogen Fertilisers

Sulphate of Ammonia.—Export.—The market continues quiet but the large sellers are still holding firm at £7 per ton, f.o.b. U.K. port in single bags, for neutral quality 20·6 per cent. nitrogen. The actual amount of business being transacted is small. It is understood that the representatives of the large producers are in conference in Paris with a view to agreeing prices for the year 1931–32, and little business will be transacted until prices are announced. *Home.*—The season for home consumption is now practically over, and merchants report that business is negligible. It is not certain when the home prices for the new fertiliser season will be announced, but it is expected that this will not be until August 1.

Nitrate of Soda.—The consuming season for this product is about over and it is not certain when the prices for the new year will be announced.

Latest Oil Prices

LONDON, June 10.—LINSEED OIL was firm and 5s. to 7s. 6d. per ton higher. Spot, ex mill, £15 15s. ; June, £14 7s. 6d. ; July-August, £14 12s. 6d. ; September-December, £15 5s. ; January-April, £16, naked. RAPE OIL was steady. Crude extracted, £27 ; technical refined, £23 10s., naked, ex wharf. COTTON OIL was steady. Egyptian crude, £17 10s. ; refined common edible, £20 10s. deodorised, £22 10s., naked, ex mill. TURPENTINE was quiet and 3d. per cwt. lower. American, spot, 46s. ; and July-December 46s. 6d.

HULL.—LINSEED OIL, naked, spot and June, closed at £14 7s. 6d. ; July-August, £14 10s. ; September-December, £15 ; January-April, £15 15s. COTTON OIL, Bombay, crude, spot, unquoted ; Egyptian, crude, spot, £18 ; edible, refined ; £20 ; technical, £19 15s. ; deodorised, £22. CASTOR OIL, pharmacy, spot, 39s. ; firsts, 34s. ; seconds, 32s. (per cwt.). PALM KERNEL OIL, crude, naked, f.m.q., spot, £19. GROUNDNUT OIL, crushed/extracted, spot, £22 10s. ; deodorised, £26 10s. SOYA OIL, crushed/extracted, spot, £17 ; deodorised, £20 10s. RAPE OIL, crushed/extracted, spot, £26 10s. ; refined, £28 10s. per ton. COD OIL, spot, 20s. per cwt. TURPENTINE, spot, 48s. 6d. per cwt.

South Wales By-Products

SOUTH WALES by-product activities continue to be slow and uncertain. Pitch shows no sign of improvement, big users maintaining their policy of confining purchases to small parcels for immediate requirements. Stocks are well in excess of demand, but there is no change in values. Road tar has a fair and steady call round about 13s. per 40-gallon barrel. Refined tars have also a fair demand, with quotations unchanged for coke-oven and gasworks tar. Naphthas have a very slow call. Motor benzol is in fair demand, but creosote is weak. Patent fuel and coke exports remain unsatisfactory. Patent fuel prices, for export, are :—20s. 6d. to 21s., ex ship Cardiff ; 19s. 6d. to 20s., ex ship Swansea. Coke prices are :—Best foundry, 34s. to 36s. 6d. ; good foundry, 22s. 6d. to 25s. ; furnace, 16s. 6d. to 17s. 6d.

Scottish Coal Tar Products

ORDERS have fallen away during the week but quotations are substantially as last recorded. Business in cresylic acid has not increased to any extent despite the reduced production and consequent firmer tendency.

Cresylic Acid.—While prices continue steadier, orders remain scarce. Pale, 99/100 per cent., 1s. 5d. to 1s. 6d. per gallon ; pale, 97/99 per cent., 1s. 3d. to 1s. 4d. per gallon ; dark, 97/99 per cent., 1s. 2d. to 1s. 3d. per gallon ; high boiling, 1s. 10d. to 1s. 11d. per gallon ; all f.o.r. works.

Carbolic Sixties.—Distillers continue to stock rather than sell at to-day's level of 1s. 1d. to 1s. 3d. per gallon according to percentage of water.

Creosote Oil.—The better class oils are not too plentiful and prices continue steady. Specification oils, 2¾d. to 3d. per gallon ; gasworks ordinary, 3½d. to 3¾d. per gallon ; washed oil, 3¼d. to 3½d. per gallon ; all ex makers' works in bulk.

Coal Tar Pitch.—No business is yet reported in this area for forward delivery. Value is nominal at 37s. 6d. per ton, f.o.b. Glasgow for export, and 35s. to 37s. 6d. per ton ex works for home trade.

Blast Furnace Pitch.—Remains dull at controlled prices of 30s. per ton, f.o.r. works for home trade, and 35s. per ton, f.a.s. Glasgow for export.

Refined Coal Tar.—Weather conditions have held up deliveries to a considerable extent. Price remains weak at 2½d. to 2¾d. per gallon, ex works naked.

Blast Furnace Tar.—Without interest at 2¾d. per gallon.

Crude Naphtha.—Production continues low and value is steady at 4¼d. to 5¼d. per gallon according to quality.

Water White Products.—Remain very quiet. Motor benzol is about 1s. 4d. to 1s. 5d. per gallon ; 90/160 solvent ; 1s. 3d. to 1s. 4d. per gallon ; 90/190 heavy solvent, 1s. 1d. to 1s. 2d. per gallon ; all ex-makers' works in bulk.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing this firm's independent and impartial opinions.*

Glasgow, June 9, 1931.

EXPORT and home business still remains steady in the Scottish heavy chemical market.

Industrial Chemicals

ACETONE.—B.G.S.—£60 to £63 per ton, ex wharf, according to quantity.

ACID, ACETIC.—Prices ruling are as follows: glacial, 98/100%, £47 to £58 per ton; pure, £37 5s. per ton; technical, 80%, £36 5s., delivered in minimum lots of 1 ton.

ACID, BORIC.—Granulated commercial, £22 per ton; crystals, £23 per ton; B.P. crystals, £31 per ton; B.P. powder, £32 per ton, in 1-cwt. bags, delivered Great Britain free in one-ton lots upwards.

ACID, HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality, 5s. per carboy, ex works, full wagon loads.

ACID, NITRIC, 80° QUALITY.—£23 per ton, ex station, full truck loads.

ACID, OXALIC.—98/100%.—On offer at 3¼d. per lb., ex store. On offer from the Continent at 3⅛d. per lb., ex wharf.

ACID, SULPHURIC.—£3 7s. 6d. per ton, ex works, for 144° quality, £5 15s. per ton for 168°. Dearsenicated quality, 20s. per ton extra.

ACID, TARTARIC, B.P. CRYSTALS.—Quoted 1s. per lb., less 5%, ex wharf. On offer for prompt delivery from the Continent at 11⅜d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE.—Quoted round about £8 10s. per ton, ex store.

ALUM, LUMP POTASH.—Now quoted £8 10s. per ton., c.i.f. U.K. ports. Crystal meal, about 2s. 6d. per ton less.

AMMONIA ANHYDROUS.—Quoted 10½d. per lb., containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton. Powdered, £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID, 80°.—Unchanged at about 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.

ANTIMONY OXIDE.—Spot material obtainable at round about £24 per ton, ex wharf. On offer for shipment from China at about £23 per ton, c.i.f. U.K.

ARSENIC, WHITE POWDERED.—Quoted £22 10s. per ton, ex wharf. Spot material still on offer at £22 15s. per ton, ex store.

BARIUM CHLORIDE.—In good demand and price about £9 10s. per ton, c.i.f. U.K. ports. For Continental materials our price would be £8 10s. per ton, f.o.b. Antwerp or Rotterdam.

BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 15s. per ton, delivered in minimum 4-ton lots. Continental now offered at about the same figure.

CALCIUM CHLORIDE.—Remains unchanged. British manufacturers' price, £4 15s. to £5 5s. per ton, according to quantity and point of delivery. Continental material on offer at £4 7s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—At about £3 15s. per ton, f.o.r. works, or £4 12s. 6d. per ton, f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Now quoted £30 10s. per ton, ex store. Continental on offer at about £29 per ton, ex wharf.

GLAUBER SALTS.—English material quoted £4 10s. per ton, ex station. Continental on offer at about £3 per ton, ex wharf.

LEAD, RED.—Price now £30 per ton, delivered buyers' works.

LEAD, WHITE.—Quoted £38 per ton, carriage paid.

LEAD ACETATE.—White crystals quoted round about £32 to £34 per ton c.i.f. U.K. ports. Brown on offer at about £1 per ton less.

MAGNESITE, GROUND CALCINED.—Quoted £9 10s. per ton, ex store.

METHYLATED SPIRIT.—Industrial quality 64 o.p. quoted 1s. 8d. per gallon, less 2½% delivered.

POTASSIUM BICHROMATE.—Quoted 4½d. per lb., delivered U.K. or c.i.f. Irish ports, with an allowance for contracts.

POTASSIUM CARBONATE.—Spot material on offer, £25 10s. per ton ex store. Offered from the Continent at £24 15s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 99⅜/100% POWDER.—Quoted £27 15s. per ton ex store; crystals 30s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £20 17s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton ex store.

POTASSIUM PERMANGANATE B.P. CRYSTALS.—Quoted 5¼d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Spot material quoted 7d. per lb. ex store. Offered for prompt delivery from the Continent at about 6⅞d. per lb. ex wharf.

SODA CAUSTIC.—Powdered 98/99%, £17 10s. per ton in drums, £18 15s. in casks. Solid 76/77% £14 10s. per ton in drums, £14 12s. 6d. per ton for 70/72% in drums; all carriage paid buyer's station, minimum four-ton lots; for contracts 10s. per ton less.

SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3½d. per lb., delivered buyer's premises, with concession for contracts.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, 7s. 6d. per ton extra. Light soda ash, £7 13s. per ton, ex quay, minimum four-ton lots, with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 2s. 6d. per ton, ex station, minimum four-ton lots. Pea crystals on offer at £15 per ton, ex station, minimum four-ton lots.

SODIUM NITRATE.—Chilean producers now offer at £10 per ton, carriage paid, buyer's sidings, minimum six-ton lots.

SODIUM PRUSSIATE.—Quoted 5½d. per lb., ex store. On offer at 5d. per lb., ex wharf, to come forward.

SODIUM SULPHATE (SALTCAKE).—Price, 60s. per ton, ex works; 65s. per ton, delivered, for unground quality. Ground quality 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption: solid 61/62%, £10 per ton; broken, 60/62%, £11 per ton; crystals 30/32%, £8 2s. 6d. per ton, delivered buyers' works on contract, minimum four-ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 10s. per ton; rock, £9 5s. per ton; ground American, £8 10s. per ton, ex store.

ZINC CHLORIDE 98%.—British material now offered at round about £18 10s. per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Quoted £11 per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Trade Publications

CONTINUOUS rapid crystallisers are described and illustrated in a new brochure issued by Werkspoor N.V., of Amsterdam.

REVISED PRICE LISTS for the Drayton thermo-gas regulator has been issued by the Drayton Regulator and Instrument Co., Ltd., of West Drayton, Middlesex.

SAFETY appliances for all industrial uses—gas masks, breathing apparatus, goggles, sand blast and smoke helmets, face protectors, gloves and acid proof garments—are described in detail, in a new edition of the Blue Book of Safety Appliances which is issued by Wallach Bros., Ltd., of 49, Tabernacle Street, London, E.C.2.

BAIRD AND TATLOCK (LONDON) LTD., of 14–17, Cross Street, Hatton Garden, London, E.C.1, have commenced to issue a monthly bulletin in which it is proposed to describe new apparatus which has been placed on the market. The first number of this B.T.L. Monthly Bulletin deals with applications of the thermionic valve in the research laboratory, including a potentiometer to determine variations in hydrogen-ion concentration.

HIGH alumina bricks for lining rotary cement kilns are described in a new brochure which has been issued by A. L. Curtis, of the Westmoor Laboratory, Chatteris. In this brochure the properties and attendant disadvantages of various substitutes are also discussed, a number of charts being given to show percentage subsidence and percentage expansion during the progress of heating the kiln and when the temperature becomes constant. The tests cited were carried out by Dr. J. W. Mellor.

BIRMABRIGHT, which is a superior corrosion-resisting aluminium alloy, is the subject matter of a very interesting booklet issued by the Birmingham Aluminium Casting (1903) Co., Ltd., of Birmid Works, Smethwick, near Birmingham. After discussing the physical characteristics of this alloy in its various forms, in comparison with other aluminium alloys which are available, a special section is devoted to a consideration of the resistance offered against corrosion. Under the heading of general manufacturing properties there is reference to the use of Birmabright for chemical engineering work, a particular branch of the business which is handled by Birmal Chemical Engineers, of Dartmouth Road, Smethwick.

ROTARY
COMPRESSORS AND EXHAUSTERS
of British Make

Made in Sizes 6 to 1,200 cub. ft. per minute capacity.

COMPRESSORS for pressures from 4 to 40 lbs. per sq. in.

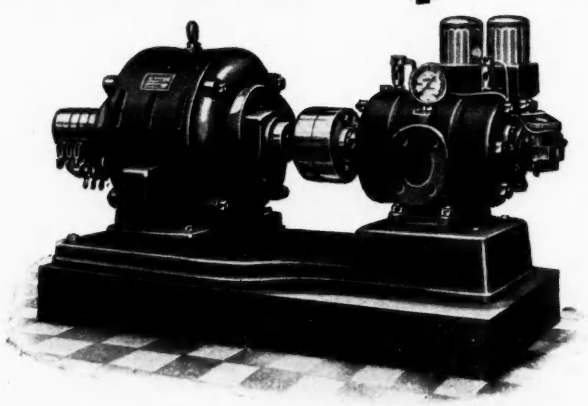
EXHAUSTERS for vacuums within ·23 in. of barometer.

ABSOLUTE SIMPLICITY

HIGHEST EFFICIENCY

AS a low pressure Compressor or Exhauster, the "Broomwade" Rotary Machine is super-efficient and ideal in all respects. Strikingly simple in design, it is low in first cost and power consumption, of extremely compact dimensions, whilst 10 years' actual experience with many installations of this type has proved it to give lasting and reliable service.

BROOM & WADE LTD.
HIGH WYCOMBE



★

Send for Catalogue "R"

★

"BROOMWADE"
ROTARY COMPRESSORS & EXHAUSTERS

Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, June 11, 1931.

Business in chemical products this week has been about back to where it was before the holiday interruption, without, however, much indication at the moment of early expansion to a higher level. Considering the state of the cotton textile industry, fair supplies of chemicals against contracts are being taken by dyeing and finishing establishments. A disturbing factor this week has been reports that bleaching works in the Bolton area are to be closed down. New bookings just now are very largely a matter of commitments over comparatively short periods, consumers, except in a few instances, refraining from covering themselves far forward.

Heavy Chemicals

Diphosphate of soda has been moving in small quantities with current offers of this material at round £10 per ton. Prussiate of soda is meeting with a moderate amount of inquiry, with prices firm at from 4¾d. to 5¼d. per lb., according to quantity. Alkali keeps firm at about £6 per ton, and fair contract specifications are reported. Caustic soda is firm at £12 15s. to £14 per ton, according to grade, and a moderate movement in this section has been reported during the past week. Bicarbonate of soda continues to be quoted at round £10 10s. per ton, and a quietly steady business in this material is being put through. There is only a quiet demand just now in the case of chlorate of soda without, however, any change in values, offers being in the region of £26 5s. per ton. Saltcake is about maintained at £2 15s. per ton. Comparatively little buying interest is being shown in sulphide of sodium and, on the whole, the price position in this section is not too strong; the commercial quality is quoted at round £8 per ton, with the 60–65 per cent. concentrated solid at about £9. A moderate movement is reported in the case of bichromate of soda and values are held on the basis of 3½d. per lb., less 1 to 2½ per cent. Hyposulphite of soda is steady although only a quiet business in this section is being done; the photographic grade is quoted at about £15 5s. per ton and the commercial at £9.

Permanganate of potash continues to sell in moderate quantities, with the B.P. quality on offer at round 5½d. per lb. and the commercial at 5¼d. Chlorate of potash is not too active and supplies are obtainable in the neighbourhood of £27 5s. per ton. Carbonate of potash is on the easy side at about £24 10s. per ton, a quiet trade being done. Bichromate of potash is steady at 4¼d. per lb., less 1 to 2½ per cent., and the demand is of moderate extent. There has been no change in the position of yellow prussiate of potash, values of which range from 6¾d. to 7¼d. per lb., according to quantity. Caustic potash has been offered this week at from £28 10s. to £29 per ton, but inquiry has not been active.

Sulphate of copper meets with a relatively poor demand, with values ranging from £18 10s. to £19 per ton, f.o.b., and still easy in tendency. Arsenic keeps up fairly well at late levels, a quiet business being done; white powdered, Cornish makes, are quoted at up to £19 10s. per ton. The lead products are in limited request, with nitrate at about £29 per ton, and white and brown acetate at £32 and £31 per ton. A quiet trade is passing in the acetates of lime, the grey material being obtainable at round £12 5s. per ton and the brown at £7 5s.

Acids and Tar Products

Sales of citric acid this week have been on a moderate scale, with values ranging from 11¾d. to 1s. per lb. Tartaric acid is fairly steady at about 11¼d. per lb., and a quiet demand is reported. Oxalic acid is held at the recent advance to £1 14s. per cwt., ex store. Acetic acid is attracting some attention and prices are firm at about £51 per ton for the technical glacial quality, and £37 for the 80 per cent. commercial product.

Not a great deal of interest is being displayed just now in the by-products. Pitch is rather quiet in respect of next season's export business, with offers at about 37s. per ton, f.o.b. Creosote oil is slow with prices at from 3d. to 3¼d. per gallon, naked. A limited business is passing in carbolic acid and quotations show no further change, crystals being offered at 5d. to 5¼d. per lb., f.o.b., and crude 60's at 1s. 2d. per gallon, naked. Solvent naphtha is now on offer at about 1s. 2d. per gallon, naked, at works.

Company News

United Molasses Co., Ltd.—The directors announce that in view of the prevailing conditions they do not feel justified in paying the preference dividend due on June 15.

A. Boake, Roberts and Co.—A dividend of 1 per cent., tax free, is recommended on the ordinary shares, making 6 per cent. for the year. The amount placed to reserve is £5,000, making £95,000, and £29,346 is carried forward.

Celanese Corporation of America.—It is announced that as earnings for the current period are substantially in excess of dividend requirements, the board has declared the regular dividends as follows:—A quarterly dividend of 1¾ per cent. on the 7 per cent. cumulative series prior preferred stock, payable July 1, and a semi-annual dividend of 3½ per cent. on the 7 per cent. cumulative first participating preferred stock, payable June 30.

Boots Pure Drug Co.—The report for the year ended March 31, 1931, states that the net profit amounted to £722,264. Trading profits, after meeting income tax, are shown in the accounts at £860,870, an increase of £3,811. Repairs and renewals absorbed £53,049, depreciation £54,911, and staff fund £30,000. The ordinary dividend is again 24 per cent., plus 5 per cent., tax free, bonus. Reserve account receives £200,000, leaving £220,342 to be carried forward.

W. J. Bush and Co.—The report for the year 1930 states that the accounts show a gross profit of £220,435. After providing for debenture interest, expenses, and directors' remuneration, and making allowances for depreciation, there is a net profit of £40,346. Adding £62,942 brought forward, less preference dividends and £3,468 for income tax, there remains £99,820. The directors recommend a final dividend of 5½ per cent. on the ordinary shares, making 8 per cent. for the year, carrying forward £79,820.

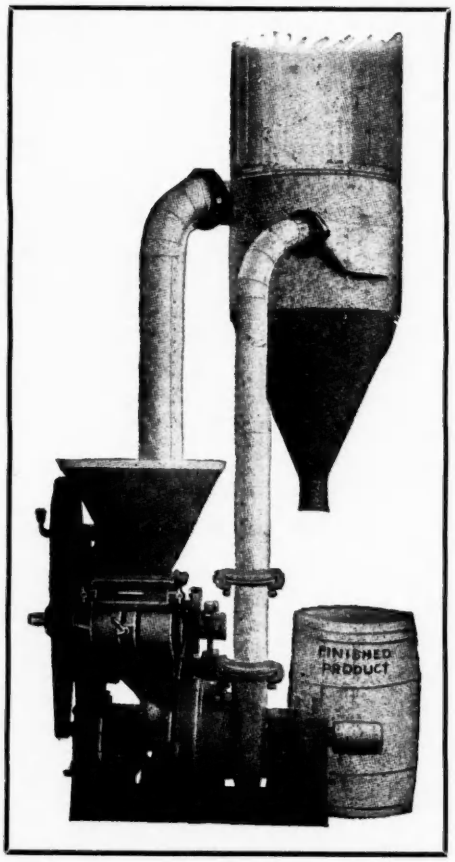
Yorkshire Dyeware and Chemical Co.—After providing for depreciation of property, plant and machinery, and all other charges and directors' fees, the report for the year ended March 31 last shows a surplus for the year of £17,009, to which is added the balance brought forward of £3,510. After deducting interest on debenture stock, less tax, £3,976, and interim dividend, less tax, £2,906, there remains £13,637. The directors recommend a dividend at the rate of 7½ per cent., making 10 per cent. for the year, less tax, carrying forward £4,918.

J. C. and J. Field.—For the year ended March 31, 1931, the report shows that after providing for repairs and depreciation, income tax, directors' and auditors' fees, legal charges and expenses of secretary's department, there is a profit of £18,078, to which has to be added £7,652 brought from last account, making £25,730. The board recommends a dividend of 7 per cent. on the preference shares, less tax, a dividend of 10 per cent. on the ordinary shares, less tax, placing to reserve fund £5,000, carrying forward £9,024. The annual meeting will be held at Winchester House, London, on June 15, at 12 noon.

W. J. Bush and Co., Ltd.

Presiding at the thirty-fourth annual general meeting of the shareholders of W. J. Bush and Co., Ltd., held in London on Monday, June 8, Mr. James M. Bush (joint managing director) said that the firm has made considerable progress in the manufacture of a number of fine chemicals, but, in view of the uncertain future fiscal policy of this country, they hesitate to expend further capital in this field. Under the conditions afforded by the key industries section of the Safeguarding of Industries Act, they have had time in a number of cases to increase their efficiency to a point which they have reason to believe is equal to that reached by the best continental practice. The field is so vast, however, that they can only regard this industry as not yet fully developed, and much has to be done before this country reaches this position. In their opinion, the discontinuance of the key industries section of the Safeguarding of Industries Act would be a great discouragement to English chemical manufacturers, would inevitably involve big capital losses, increase unemployment and jeopardise national safety.

Dust danger eliminated with RAYMOND "0000" PULVERISER



In addition to this highly important factor, especially when grinding materials injurious to health,

The RAYMOND PULVERISER
IS
very widely adaptable.

Its efficiency is established by the ever-increasing number of important manufacturers installing this pulveriser.

The Raymond is compact and easy to erect. No special attention is required during operation.

The Raymond will pulverise material containing more moisture than can be efficiently handled with any other kind of mill because of its air separation principle.

MINING & INDUSTRIAL EQUIPMENT LTD
ASSOCIATED WITH — INTERNATIONAL COMBUSTION LTD
11, Southampton Row, London, W.C.1.
Works: Derby & Erith.

TELEPHONE:
HOLBORN 7277 (3 LINES)

TELEGRAMS & CABLES:
HARDRAYMIL WESTCENT LONDON

Chemical Trade Inquiries

These inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

EGYPT.—The Plants Protection Section of the Ministry of Agriculture, Egypt, is inviting tenders for the supply of 150,000 kilos of commercial sulphuric acid and 50,000 kilos of sodium cyanide required during the year 1931-32. Tenders will be received at the Stores Office, Ministry of Agriculture, Cairo, up to noon on July 21, 1931. A copy of the tender form, specifications and conditions of tender can be inspected at the offices of the Department of Overseas Trade (Room 52), 35, Old Queen Street, London, S.W.1; a further copy is available for loan to firms who are unable to arrange for inspection in London. (Ref. F. 1154.)

EGYPT.—The Department of Public Works, Cairo, is calling for tenders, to be presented in Egypt by August 5, for the supply of 10 paraffin oil-heated stills, complete with burners, output capacity half-gallon per hour. (Ref. A.X. 10946.)

EGYPT.—The Egyptian Ports and Lighthouses Administration is calling for tenders, to be presented in Alexandria by August 13, for the supply of paints, dry colours, whiting, soap, tar, etc. (Ref. B.X. 7090.)

SOUTH AFRICA.—The City of Johannesburg is calling for tenders, to be presented in South Africa by July 16, for the supply and delivery of sewage chlorination plant. (Ref. A.X. 10948.)

SOUTH AFRICA.—The South African Railways and Harbours Administration is calling for tenders, to be presented in Johannesburg by July 20, for the supply of varnishes and enamels, required over a period of 1, 2 or 3 years. (Ref. B.X. 7088.)

MESOPOTAMIA.—A general commission agent, importing and exporting goods on commission in conjunction with various Bagdad merchants, desires to secure the representation of British manufacturers of chemicals of all descriptions. (Ref. No. 517.)

ROUMANIA.—The Roumanian Railway Administration is calling for tenders, to be presented in Bucarest by June 30, for the supply of 20,000 kilogrammes of rectified turpentine. (Ref. No. B.X. 7094)

Tariff Changes

BELGIUM.—According to a recent decision of the Belgian Customs Administration, nitrate of barium is now classified in the Belgian Customs Tariff as "other unspecified chemical products (No. 384D)—duty free." Iodide of potash is also now classified as "unspecified potash salts (No. 344)—duty free."

GREECE.—Reduced duties provided for by a Commercial Convention between Greece and Hungary, signed June 3, 1930 (which when enforced will also be applicable to similar United Kingdom products) include carbonate of potash, the present import duty of which is fixed by treaty at 0·50 gold dr. per 100 kilos, in place of 1·50 gold dr. hitherto imposed.

POLAND.—An order, dated April 22, modifies the Polish Customs Tariff relating to animal fats and oils, vegetable greases, liquids and acids thereof. This order comes into effect from May 8.

Official Chemical Appointments

THE seventh (1931) edition of *Official Chemical Appointments*, published by the Institute of Chemistry, 30, Russell Square, London, W.C.1 (price 5s.), follows the general scheme adopted in previous editions, but as the last issue of this publication was in July, 1927, the present edition necessarily contains many additions and revised entries. The whole of the information given has been obtained from official sources.

Intended primarily for the use of professional chemists and those who contemplate the practice of chemistry as a profession, this publication has also been found useful by authorities and others interested in the application of chemistry to purposes of State, and in the promotion of higher education in this particular science. Its value is increased by an index to the names of present holders of the appointments enumerated.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

London Gazette, &c.

Companies Winding Up Voluntarily

ALIANZA CO., LTD. (C.W.U.V., 13/6/31.) By special resolution, June 3, 1931. Mr. George Savage, of Friars House, New Broad Street, London, E.C.2, appointed liquidator. Creditors' claims to liquidator by July 20.

LAGUNAS NITRATE CO., LTD. (C.W.U.V., 13/6/31.) By special resolution, June 3, 1931. Mr. George Savage, of Friars House, New Broad Street, London, E.C.2, appointed liquidator. Creditors' claims to liquidator by July 20.

LIVERPOOL NITRATE CO., LTD. (C.W.U.V., 13/6/31.) By special resolution, June 3, 1931. Mr. George Savage, of Friars House, New Broad Street, London, E.C.2, appointed liquidator. Creditors' claims to the liquidator by July 20.

NEW TAMARUGAL NITRATE CO., LTD. (C.W.U.V., 13/6/31.) By special resolution, June 2, 1931. Mr. W. O. M. Walton, Finsbury House, Blomfield Street, London, E.C., appointed liquidator. Creditors' claims to the liquidator by July 20.

UNITED KINGDOM GLASS CO., LTD. (C.W.U.V., 13/6/31.) Creditors' claims to H. W. Robinson, York House, Dawley Road, Hayes, Middlesex, the liquidator of the company, by July 21. All creditors will be paid in full.

New Companies Registered

LINCOLNSHIRE LIME CO., LTD.—Registered June 4. Nominal capital, £1,000 in £1 shares. Quarry masters, stone and lime merchants, manufacturers of and dealers in fertilisers, etc. Directors: J. G. Shields, Isley Walton, Derby; F. E. Purchase, F. Russell, G. Mawer, A. Mawer.

L-P-W PLATING PLANTS, LTD., 119, Bishopsgate, London, E.C.—Registered June 6. Nominal capital, £100 in £1 shares. Manufacturers, importers and exporters of and dealers in electro-plating plants, electro and other deposition plants, accessories, equipments, chemicals, etc. Directors: Wilhelm A. F. Pfanhauser, Walter F. Wuerker and Geo. Cooper.

Scottish Oils, Ltd.

SIR JOHN CARGILL drew a black picture of the future of the shale industry when presiding at the annual meeting of Scottish Oils, Ltd., in Glasgow, on Friday, June 5. He said the losses being sustained by the shale oil companies are now so serious that their resources—already considerably depleted by adverse conditions of recent years—will not permit of operations being maintained on the present scale and the directors have been most reluctantly forced to the decision that if any portion at all of the industry is to be saved operations must now be restricted to those units whose losses are least. This means that a further group of shale mines and oil works must be closed, including the permanent loss of employment to about 2,000 men directly engaged, and a further number in the coal fields and other industries supplying fuel and chemicals. This step is being taken after the closest examination of the whole position, and the most thorough search of any means which might breach the gap between income and expenditure.

Manchurian Bean Oil Industry

WITH the fall in the price of beans in Manchuria and the introduction of special rates for the transportation of soya beans for the manufacture of oil and bean cake to Harbin by the Chinese Eastern Railway, the oil manufacturing industry along the C.E.R. has become quite active again. The number of factories in operation in North Manchuria along the Chinese Eastern Railway is 52, which represents 80 per cent. of the whole industry. With the growing demand by Japan and Korea for bean cake as a fertiliser, a daily output of 120,000 pieces of bean cake is expected.